The Plough, the Loom, and the Anvil.

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COMPARATIVE EXPORT OF FOOD BY ENGLAND AND THE UNITED STATES.

THE following passage from a speech by an eminent merchant of Liverpool, now in Parliament, has gone the rounds of most of the newspapers of the Union; but we desire to place it on record for the use of our readers, believing that it contains information highly important to every farmer and planter in the country:

"Paradoxical as it may appear, I think Great Britain the largest grain-exporting country in the world, although it is impossible to calculate accurately what quantity of grain, and other farming productions, is consumed in preparing fifty millions of exports by which she so greatly benefits. This grain, and these farming products, are placed in the laboratory of that wonderful machine, man, which gives him the physical power, aided by steam, of converting them into broadcloths, calico, hardware, &c., and in those shapes your wheats and farming find their way to every country in the world."

England *is* the largest exporter of food in the world. The amount of it that she thus annually exports can scarcely be less than from one hundred and fifty to two hundred millions of dollars, and yet but about three-tenths of her population is engaged in the work of cultivation. The total export of the products of the earth—food, tobacco, cotton, &c.,—by the people of the United States, where at least seven-tenths are engaged in that work, but little exceeds a hundred millions of dollars, except in seasons of famine and revolution in Europe.

Both systems are unsound, because both tend to the separation of the loom and the anvil from the plough and the harrow. England desires to compel the rest of the world to bring to her their food and their wool, that the latter may be woven and returned, and she therefore buys food at the high price that is consequent upon her distance from its place of production. Food is therefore scarce with *the many*, while the rents receivable by *the few*, owners of land, are large. The former are crowded together in large manufacturing and commercial cities, there to live in the cellars of houses situated in undrained and ill-ventilated streets, and the consequences are exhibited in the following passage, which we take from an article in "The London Morning Herald," describing the early training of thousands and tens of thousands of the occupants of its great metropolis.

"It is idle to talk of secular education—it is idle to talk of religious instruction, whilst the great mass of the people have no homes. How are we to teach, how are we to instruct; what can the schoolmaster achieve, what the preacher, when the intellects which the one would elevate, and the hearts which the other would teach, are left to the cruel training of the streets? Thousands and tens of thousands of our children have no other education, no other Christianity, than the education and Christianity of the pavements. The hard flag stones are their text books; the foul gutter is their Pierian spring. They lisp blasphemy and indecency; they take God's name in vain before they know the meaning of the words they utter. Savages, in the midst of civilization, they are more irreclaimed than the savages of the wild and the desert."

Such are the effects of a system which teaches that labor applied to the work of transportation, conversion, and exchange, is more productive than that applied to production, and which places commerce in the first rank as

a civilizer of mankind; and yet if we look to our Treasury Reports, and our Patent-office Reports, we see the same doctrine put forward for the acceptance of the farmers of the Union, who are to be taught, in defiance of all experience, that the more numerous the wagons, and horses, and men, on the road, engaged in the work of transportation to distant markets, the richer they will grow.

Both systems are, as we have already said, unsound. England desires to separate the ploughs and the looms of other nations from each other, and she keeps herself poor by the effort, while impoverishing every country that is in close connection with her, as may be seen in the depopulation and abandonment now going on in Ireland, as it has already done in India: and in the depopulation and abandonment of Virginia and South Carolina, and as must be seen in every country of the world, in which the product of the land is not consumed upon or near the land, thereby enabling the cultivator to return to our great mother earth the refuse of her products. To her influence alone it is due that the people of the Union are scattered over so vast a surface, unable to combine with each other for the purpose of rendering their joint labors more productive—unable to clear and drain rich soils, and compelled to cultivate poor ones, yielding bushels of wheat where they might have tons of hay, or turnips, or potatoes—compelled to expend in the making of roads, and in the work of transportation, a large portion of the produce of those poor soils—and remaining poor when they might grow rich, if the loom and anvil could be permitted to take their places by the side of the plough and the harrow. To her influence also is it due that vast cities are growing up, built out of the spoils of the farmer, in which are obvious many of the characteristics which distinguish the great cities of Europe. Enormous wealth is there seen side by side with poverty and vice, resembling in no small degree that described in the passage from "The Herald," given above. With each succeeding year is more and more seen an increase of this tendency to inequality of condition, and yet such is the state of things that our late rulers have desired to see perpetuated and extended. Educated in the English school of political economy, with them commerce was every thing. Every increase in the number of ships was regarded as evidence of increasing wealth. The more wagons that were on the road, the greater was supposed to be the quantity of food, and cloth, and fuel, to be divided among the community, yet ships and wagons produce none of those good things. The ploughman adds to the stock of food. The laborer in the cotton field increases the supply of wool. The miller converts the grain into flour, and the spinner and weaver convert the wool into cloth. The sailor and the wagoner produce nothing, and yet, according to the doctrines so recently in fashion at the Treasury, the real wealth of the nation—that is, its power to produce the food, the clothing, the shelter, and the fuel, required for its population—is to be measured by the number of its ships and wagons, its sailors and its wagoners: by the quantity of capital and labor applied to the work of transportation and exchange, adding nothing to the quantity, and making no change in the form, of commodities to be exchanged.

Throughout the whole of the recent Treasury Report may be seen a constant straining after that which is impossible, the securing of a foreign market for our surplus food, in the form of food. That it is impossible will be obvious on the slightest consideration. The only great importer of food is Great Britain, and she requires in ordinary seasons but a very trivial quantity when compared with that for which we desire to find a market, and small even as it is, the competition for its supply on our part would reduce prices abroad so low that our farmers would be ruined.

Russia produces annually, over and above her consumption,* more than seventeen millions of quarters of spring and winter grain, for which she needs a market. Here, then, are a hundred and forty millions of bushels, in addition to all that is produced in the other countries of Europe that have made no market on the land for the products of the land, and it is with this immense mass that our farmers are to contend for a market for the wheat produced in Iowa, Illinois, and Wisconsin, when by a different course of operation they could have a market at their doors, made by the persons who would eat their food, while converting their wool into cloth, and their ore into iron.

The Commissioner of Patents is, however, after full examination of the subject, confirmed in the belief "that the American grain-growers can deliver grain or flour at as low a price in England as the grain growers of any other country, not excepting Russia on the Black Sea, and that they have it in their power to command the great grain markets of Great Britain, and of nearly all the corn-importing countries of the world." He does not, however, tell us what the people of Russia, and of other corn-exporting countries, are to do with their enormous surplus, when we shall have placed ourselves in the position he so much desires that we shall attain, nor does he seem to see that, send what we may, all their surplus grain must find vent somewhere, and that the inevitable effect of large competition for a small market must be so great a reduction of prices as to ruin the farmers both of Russia and America.

If we desire to become large exporters of food, we must provide ourselves with the machinery required for converting it into cloth, and iron, and such other commodities as are readily transported. We must place the loom and the anvil by the side of the plough and the harrow, and pass the food through that greatest of all machines, the human stomach, retaining for the land the refuse of its products. Doing that, the land will be enriched, and its owner will be enriched, and better soils will be brought into cultivation, and men will cease to fly from each other, and the nation will become stronger by concentration, instead of, as now, being weakened by a constant expansion over poor soils, the cultivators of which are obliged to contribute a large portion of their earnings to the support of men and horses engaged in the work of transportation, and merchants and traders, large and small, engaged in that of exchange. The nearer the consumer and the producer can be brought to each other, the smaller will be the proportion of exchangers and transporters to producers, the larger will be production, the richer will the farmers and planters grow, the better will all be fed, and clothed, and lodged, and the greater will be the progress of intellectual and moral, as well as of physical, improvement.

Oyster-shell Lime.—Some want to know how shells compare in quantity before and after being burned. On trial, 550 bushels when put in the kiln, were reduced to 407 on being calcined. Then on being slaked, they yielded 569 bushels fine slaked lime, and 61 of course stuff, easily pulverized. They took 16 cords of wood in pens, joining each, which is more economical than burning in single small pens.

Hedges.—The most elaborate papers on the cultivation and management of hedges, were addressed by Caleb Kirk, of Delaware, to J. S. Skinner, and published in 1819, in "The American Farmer."

* Patent Office Report, 1847, p. 557.

ON PICKING STONE OFF YOUR LAND.

MAY YOU NOT OVERDO IT?

[From the Mark Lane Express.]

SIR:—I occasionally observe in your excellent journal many useful articles on agriculture, but I do not recollect of having ever seen any thing said by your numerous correspondents, censuring the very improper mode of farming practised by too many excellent farmers, in reference to the care with which many of them gather the stones off their fields. I have myself had many tough arguments with farmers about this matter, pointing out to them the foolish expenditure of money by the too careful gathering of small stones; while, as I have myself many times seen during the period of preparing the fields for corn and green crops, numbers of hands employed picking up the smallest stones, while at the same time they were permitted to leave behind them large quantities of *noxious weeds*.

Now, it is well known that by picking up the stones too carefully every year the active soil is not only rendered shallower in consequence, but what is worse, the ground is robbed of a great deal of heat that would otherwise be imparted to it; for practical and scientific men know well that stones lying on the surface exposed to the direct rays of the sun, get heated during the day, and as they retain a considerable portion of that heat during night, impart much warmth to the soil; and it must have been often noticed that there is under all stones of any size lying on the surface more or less of moisture; an observing eye will easily perceive the blades of corn crops, as well as of grass growing round these stones, not only stronger and more vigorous in appearance than in other parts of the field, but also of a beautiful dark green color—a sure evidence of the healthy state of the plants, and consequently of the nourishment which has been afforded to them.*

If landlords, as well as the occupiers of farms, would more attentively consider their own interest, they should never allow any stones less in size than common road metal, or rather what would go through a three inch ring, to be removed from the surface of their fields, but rather *roll them into the soil with a heavy roller:* and if greater attention was observed by agriculturists in selecting every two or three years *good* perennial seeds, there would be fewer weeds to gather every spring and summer.

Many intelligent farmers gather the weeds into heaps, and then burn them on the fields; but this is a bad plan, though it may save a little trouble and expense in cartage. It is better where there are quantities of weeds to cart them to the corner of the field, and there make them into compost by mixing them with hot lime, and in two years the mould is excellent for top-dressing any parts of the field, the active soil of which may be shallow, and of indifferent quality.

I would venture to recommend every farmer to turn his attention more to the *cleaning* of his fields, and *less* to the gathering of the stones, unless, indeed, they are of considerable size, which certainly do hurt, and ought to be removed. Nothing connected with neat farming is more untidy and unseemly than stones piled up in heaps in the furrows, and there allowed to remain, sometimes for two or three years, not only an eye-sore, but offering great obstruction to the sickle and scythe, and rendering the site on which they are laid not only unproductive, but worse than useless.

I have never seen it tried, nor have I ever heard of any person having made the experiment, but I do certainly believe that when the proper

* Is not this a corroboration of Dr. Baldwin's theory of the effects of *shade?*

management of the soil becomes to be better understood, from the great exertions that are at present in progress, it will be reckoned no uncommon thing to see laborers employed, where there are fields of loamy soil, overlaying the surface of such fields with large quantities of silex, or small granite stones, if they can be procured, that they may amalgamate or mix with the soil, for the very purpose of imparting heat and moisture, thereby doing what many farmers, contrary to their own interest, now very often undo. Indeed, were it possible to pound the granite rocks, (and there could be no difficulty in inventing a piece of machinery for that purpose,) I have no doubt whatever but the powdery or pounded substance would be found suitable and profitable to mix with some soils. It is well known that gravel, or tilly soil, is an excellent top-dressing for moss, and strong clay for soil of a light sandy nature; in like manner, I am of opinion that silex in large quantities, laid as a top-dressing on the surface of a heavy loamy soil, and worked into it, would be equally beneficial, though it would be found that the straw of the corn crops on such soil would grow shorter than formerly; but nevertheless it would certainly be firmer in texture, and consequently better for food, and the grain would also be heavier and better in quality. And here I would venture to offer an opinion, that a heavy loamy soil would never be found suitable for cropping, were such soil manured by the sewerage water of towns thrown over it by irrigation, for assuredly nothing would be produced but abundance of soft straw. But *mix such soil with a large quantity of coarse gravel or small stones*, and then the sewerage water would be found to do admirably for corn crops, as well as for green crops and grass.*

It should be the business of every person connected with agriculture to use his utmost endeavor, consistent with a proper regard for economy, to exert himself for the improvement of the soil; for I do believe when this becomes to be better known, it will astonish every one what may be done with it, especially after it has been laid thoroughly dry by a proper mode of drainage, for without that *(the first and most important of all agricultural improvements,)* it would be a complete waste of money to try any experiments whatever, however profitable and interesting in the outset they might seem. I am, sir, yours, &c. F.

[We know a gentleman in Maryland, who has a "natural turn" (if there be any such thing as a natural turn) for farming, who has had his land picked over, and the stone carried off, eleven times; but doubtless there is still enough left on to meet the views of this writer. There seems to be more reason than rhyme in what he says, and as for the value of clay on sandy land, as an ameliorator, some of the most intelligent farmers in England have lately averred, that its good effects endure for more than twelve years, to an incoming tenant, who enters the next year after the clay has been applied.]

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* We recommend this suggestion to the attention of our friends on Elk Ridge, Maryland. A suggestion of this kind was made to us lately by Dr. Hare; that is, of the availability of a kind of stone abounding in the soil of that region, for manure, when pulverized. The attention of Charles Carroll, of Carrollton, has too been called to the subject by Dr. Hare, who, we believe, received the suggestion from Professor Baer. Here we may mention that Bogardus's mill would answer to pulverize these quartz stones, if it be quartz to which allusion has been made.

How enviable the position of such men as Mr. Carroll, with their ample domains, and various soil, and abundant means and materials for all sorts of experiments and demonstrations for the benefit of the most important of all human pursuits!

HOW MUCH PORK WILL A BUSHEL OF CORN MAKE?

THIS question has been answered by two correspondents of "The Ohio Cultivator," with all the particulars on which they based their calculations.

The first one says that in 1845, when "there were a great many acorns," he made 20 pounds of pork for each bushel of corn. In 1846, he got also $10\frac{1}{2}$ pounds of pork in return for the bushel of corn. In 1847, 11 pounds. In 1848, he got $12\frac{1}{5}$ pounds per bushel.

In summing the four years together, he got 12,750 pounds of pork in return for 1,030 bushels of corn—equal to $12\frac{3}{8}$ pounds to the bushel.

In 1845, pork sold for $4 per 100 lbs.; in 1846, $2.75; in 1847, $3.25; and in 1848, $3. Suppose the price of pork averages $3, it will make corn bring $37\frac{1}{2}$ cents per bushel. But it has averaged more—about $3.25—which makes the corn bring $40\frac{5}{8}$ cents per bushel. The first year it brought 80 cents; the second year, $28\frac{7}{8}$ cents; the third year, $38\frac{3}{4}$ cents; the fourth year, $37\frac{1}{5}$ cents per bushel.

The other correspondent says, on his experience, which he details, that he can get 8 pounds from a bushel with a good breed of hogs.

It may be presumed that every farmer who habituates himself to useful inquiries, sometimes asks himself the question—At what relative price between corn and meat is it profitable or otherwise for a man to raise, and kill, and cure his own bacon? It does not answer, however, to decide such questions by arithmetical calculations too nicely drawn out—for it is hard to know what allowance is to be made for the time and labor expended in looking after your hogs on the one hand—the injury they do to your crops, and the ill-feeling they beget by trespassing on your neighbors, and the credit due on the other hand for the manure they *ought to* make; but above all, for the satisfaction to be enjoyed in the consideration that when the hog makes his final appearance on the table, you know all about his parentage, birth, and education—from his first nestling in the bed of leaves in the woods, to his being stuck in the pen, and hung up in the smoke-house. How, by any other system than raising your own pork, can the good housewife point the cook to a nice jowl, or sweet piece of belly-bacon—streak of fat and streak of lean—to be served up at this season with a dish of turnip-tops, or cabbage-sprouts, and a fat pullet for dinner?—and does not that alone, as far as his domestic consumption goes, double its intrinsic value in the eye of every man of *taste*, who deserves to enjoy a luxury to be had, alas, only *in the country*, and not by any means in all parts of that.

P. S.—In certain neighborhoods, there is a large per centage allowance usually made for the special benefit of *thieves*—in the number of pigs to be turned out. That per centage varies from 5 to $33\frac{1}{3}$ per cent.; and as land ought to diminish in value in like proportion, is it not clear that it much more behooves landholders of every neighborhood to be giving their mind and heart to the means of *putting down thieves* instead of *putting up demagogues?* These rogues abound most where ALL are cultivators, and where there is the least diversity of employment. They are fewest where the presence of various manufactures offer constant employment and support for labor of every species, and people of every age and description. Hence it is, reader, that you should help us to draw the loom and the anvil near to the plough and the harrow.

WHAT HAVE FARMERS TO DO WITH QUESTIONS ABOUT POLITICAL ECONOMY?

How slow is the progress of truth when great national questions get to be mixed up and identified with party combinations and interests! Had not the question of protection of American industry, as essential to national independence, been taken up and forced into the arena of *party* conflicts as an element of success in the struggles for political power, we should, at this day, from our superior advantages, have been manufacturing for ourselves, and have gained that supremacy as a manufacturing and commercial people, which England sustains towards the world, by the power of her fleets and armies, and her exorbitant system of taxation.

Twenty-six years ago, the farmers of Pennsylvania addressed to the Congress of the United States, a memorial, such as they are urging at this time, and a single extract from which is enough to satisfy any unprejudiced mind of the folly of dependence on other countries for our essential manufactures. The *idea* as presented in this memorial is one of great force, and illustrates itself. It is this—that while our population is increasing at a rate unexampled elsewhere in the world, and therefore, and in like proportion, our demands for manufactures must increase; there is abroad no corresponding increase for our agricultural produce, resulting from an equal increase of population; and thus, while our demands for what we must have from them, under a free trade system, must be every year increasing, at an enormous rate, and their demands for our produce is comparatively stationary, *we must become more and more the debtor nation*, even if they would take our produce. Does it not then become us as a nation, if we wish to keep out of debt, and maintain our independence, to *manufacture for ourselves here at home!* Then we should live, as every farmer wishes to do, as much as practicable, within himself; or, if he must buy, he buys one thing from a neighbor who will take something in exchange; and thus both keep out of debt, and maintain their independence.

The extract to which we allude is as follows, dated Dec. 15, 1823. Who would believe that the blindness which is begotten in the fierce conflicts of party could so long postpone the universal admission of truths so clear! Talk about farmers having nothing to do with such questions! Why they are the very people that have, or ought to have most to do with them; unless they think it better to have rivals than customers. If they looked more into such questions, they would ride instead of being ridden.

"The protection of that important portion of industry employed in manufactures, at all times a sound and necessary policy, and supported by the opinions of the wisest statesmen, and the example of the most prosperous nations, has become at present an imperious duty—the foreign demand for our staples having, as above stated, considerably decreased; the quantity about one-third; and the amount nearly two-thirds; since 1811, notwithstanding the increase of our population in the intervening period.—***Whereas our demands for manufactured goods must increase with our increasing population. We in consequence buy more from, than we sell to, foreign nations; and this, with nations, is as unerringly the road to ruin as it is with respect to individuals.***

"Were there any doubt on the important subject thus respectfully presented to your view, it would be removed by a comparison of any two tracts of our country, in one of which manufactures are carried on extensively—and in the other agricultural pursuits chiefly or wholly, particularly when remote from the advantages of sea-port towns, as is the case with one-half of our territories. In the one, agriculture and horticulture, certain of steady and increasing markets, are carried on with life and spirit—lands are rising in price—every thing flourishes—and, what is of incalculable importance to the farmers, their females and children find valuable employment in and from the factories, for fragments of time which would otherwise be wholly lost. Habits of industry are thus acquired and rewarded—and public and private prosperity promoted. Whereas, in parts of the country destitute of manufacturing establishments, circulation is either arrested, or moves

with a sluggish pace—money is rare and difficult to be procured—there are no markets for horticultural articles—lands are of little comparative value—in a word, every thing languishes. To exemplify this position, and to place it beyond the power of contradiction, it is sufficient to refer to the neighborhood of Providence and Wilmington, on the one hand, and numerous districts in the interior of Pennsylvania, and in the fertile districts of Kentucky and Tennessee on the other. The difference of soil, and some other natural advantages, is greatly in favor of the latter. But the contrast in prosperity is immensely in favor of the former—and the inference in support of the system we advocate irresistible."

THE STUDY OF NATURAL HISTORY.—THE OPOSSUM.

It would, we trust, be superfluous for us at this time of day to repeat suggestions so often made in other days and journals under our control, that natural history should be regarded by every one in the country as one of the chief sources provided for their profitable study and most agreeable recreation. With all the kingdoms of natural history, animal, vegetable, and mineral, the farmer has more or less to do every day of his life; but of them all, that which treats of animal life, termed *zoology*, holds out the richest and perhaps the most pleasing resource, though such men as Col. Wilder would probably say, that in all animated nature there is nothing so interesting as a magnificent carnation or Japonica, or so toothsome as a magnum bonum plum or a luscious Bartlett or fragrant Secle pear.

The great and essential difference which separates the two kingdoms, animal and vegetable, consists, as all know, in their different modes of *assimilating their food*, or of converting it into parts of their own structure. While plants imbibe their nourishment through their external organs, as their roots and leaves; animals possess an internal place of deposit, into which the food must be placed, as in a crucible, to be there first prepared and absorbed into the system. For pursuing both these branches of natural history, the farmer and his sons possess peculiar facilities, if they would open their eyes and their hearts to their enjoyment. One of the greatest benefits the father can confer is to provide his sons with a few of the best authors, and otherwise, by all the means in his power, encourage them to investigate the nature and physiological economy of every thing around them. The love and the habit of doing so being once established, a source of pleasure is opened to them, of which no adversity can deprive them while their faculties remain. In this conviction, and feeling it to be no less a matter of duty than it has ever been of inclination, to amuse and beguile as well as to edify the rising generation, according to our poor abilities and means, we shall give occasional sketches of natural history, over and above those which fall now within the department of "*Reading for Mothers and Children.*"

One of the most curious subjects of speculation among zoologists has been that of the *gestation of the opossum*. So much doubt still hung upon it, in the view of the great naturalists of France, that when General Lafayette (blessed be his memory!) came to this country, he asked as a favor of the Senior Editor of this journal, that he would enable him to comply with their request to send or take back with him to Paris a male and female opossum, that every possible expedient might be adopted to settle the disputes of eminent zoologists on the subject.

The question was opened for discussion in the old Turf Register and Sporting Magazine, then published at Baltimore, and a portion of which was appropriated systematically to the elucidation of such topics. We

remember levying a contribution on PROFESSOR DUNGLISON, (then of Baltimore, now of Philadelphia,) who, as might be expected of a really scientific philosopher, took the side of the old-fashioned natural process of procreation and parturition. But, be that as it may, it is in our mind a "fixed fact" that the young of the opossum has been repeatedly found, in a state not yet apparently developed, adhering to the teat of the mother by a ligature, which required to be *broken*, in order to detach it from its parent stem; and our impression has been that, however it may have found its way there, it continues so to adhere until it attains a certain degree of maturity, when it becomes detached, and then may have recourse, like the young of other animals, to the mother's breast as the fountain of sustenance.

There are some papers on the subject, in these our old volumes of the Turf Register, more exact and authentic than the wild speculations of Buffon, who expressed the opinion, that "the dam *always miscarries*, and the fœtuses save their lives in sticking to the paps, without leaving them, till they have acquired the growth and strength whereto they would *naturally* get in the womb."

From the late Judge Kell, of Baltimore, and from Col. Andrews, of Washington, as well as others, we well recollect to have heard authentic facts in support of the opinion we have given above. Had not these remarks been spun out beyond what we intended, we should have copied some of these articles from the work referred to. We may give them hereafter; in the mean time we invite papers on this and kindred subjects from such of our readers as agree with us that such subjects are or ought to be above all others most congenial and convenient to those who abide in the country, as —*who would not if he could?*

"Oh happy country life! pure like its air;
Free from the rage of pride, the pangs of care."

All American youth who desire to be familiar with the other branch of natural science, especially *agricultural botany*, should lose no time in procuring what has been written on it so clearly and so well by *Doctor Darlington*, of West Chester, taking special care not to omit his paper on the *true grasses*—a paper which, with his leave, we shall do up in the form of catechism for the benefit of our readers; and, as for *borrowing* knowledge, we avow our readiness at all times, however little we may have to give in return, to receive as much as anybody will lend us; and, if for any thing we would break the eighth commandment, it would be to "*steal*" *knowledge;* for the more a man gets, the more will he be inclined, with Job, to inquire, "Whence, then, cometh wisdom? and where is the place of understanding?"

Fable.—The sword of the warrior was taken down to brighten; it had not been long out of use. The rust was soon rubbed off, but there were spots that would not go, they were of blood. It was on the table near his secretary. The pen took advantage of the first breath of air to move a little further off.

"Thou art right," said the sword, "I am a bad neighbor."

"I fear thee not," said the pen, "I am more powerful than thou art; but I love not thy society."

"I exterminate," said the sword.

"And I perpetuate," answered the pen; "where were thy victories if I recorded them not? Even where thou thyself shalt be one day—in oblivion."

AN AGRICULTURAL ANNIVERSARY, AND A CHURNING MATCH.

The Newcastle County, Delaware, Agricultural Club, held its Seventh Anniversary at the residence of its hospitable founder, Dr. J. W. Thomson, on the last day of January, 1849. The members were strong in force of numbers as well as spirits—attracted and exhilarated equally, as it is but fair to infer, by their love of the good cause—of their good host—and of his good cheer.

The Senior Editor of "The Plough, the Loom, and the Anvil," was there in their midst, attracted by special invitation, and no less special inclination. Finding in the Doctor's Agricultural Library a full set of the old "American Farmer," with which he happened to be somewhat familiar from its foundation, the said Editor called the attention of the company to the full account there given, some thirty years ago, of the establishment of the old Newcastle Agricultural Society, and pointed to the celebrated Prize Essay of Dr. Black, written to demonstrate that Delaware lands were then intrinsically worth $500 an acre. Other reminiscences were brought up to show that the fire for improvement was then already kindled, which has been spreading ever since, until, as then and there admitted, some Delaware farmers, not then 100 miles off, are so far on the way to realize the theory of Dr. Black, that they would sigh to part with their farms at $100 an acre.

But until dinner was announced, the chief attraction, except something that bore a marvellous resemblance to old Virginia apple-toddy, (the Dr. comes from the Old Dominion,) was Mr. Anthony's famous "*double acting rotary churn*," which Mr. Emerson had brought down from Philadelphia, that the members might have ocular demonstration of its miraculous performance.

Like Maelzel with his chess-player, Mr. Emerson exposed the interior, to show that there was no witch or witchcraft about it—and truly the whole contrivance seemed to be as simple as a salt-box. Two gallons of fresh milk were thereupon poured into it, and every man pulled out his stop-watch to note its performance—six minutes being allowed. Odds in favor of time. Away went the churn, turning as lightly as a little, old grindstone, in the country, worn down to the size of a breakfast-plate, and behold, at the end of five minutes the operator took off the cover and exposed the butyraceous particles finely separated from the milk, and ready to be served up and submitted to another sense at the dinner table.

It was agreed, however, that of all the discussions of the day, not the least practical and palatable was the discussion of a *fine saddle of mutton*, which would have been deemed worthy of the skill and the pastures of a Barney or a Reybold.

There are certain remarkable agricultural coincidences about this little State of Delaware. 1. No part of the country is improving faster. 2. No people bestow more patronage on the press. Major John Jones, of Wheatland, takes and ☞*pays for* fourteen papers—four of them "professing agriculture." 3. There is no State where they better comprehend the advantages of having the loom and the anvil near to the plough. 4. They understand well the management of the dairy, the rearing of cattle, and sheep, and poultry, and vegetables—and, 5. At the close of their theoretical discussions, they have a practical way of laying their prepared subjects out upon the table, and, with knife in hand, every man demonstrating for himself his views of the animal and vegetable world with a good-will and dexterity that are quite remarkable and exemplary, as we have often witnessed, and—hope to witness again.

FIELD CULTURE OF PEAS,

RECOMMENDED FOR TIDE-WATER VIRGINIA, MARYLAND, AND DELAWARE.

We have been for thirty years endeavoring to get the culture of field peas, recommended by so many advantages, extended from North Carolina, over at least the tide-water portion of the States above named, being well persuaded that soil and climate would admit of their being cultivated, at least that far north, if not through lower New Jersey, to the Hudson—not only for purposes purely economical, and as food for man and beast, but as an ameliorator and improver of worn-out lands—for while peas in North Carolina answer the latter purpose in the same way, and even better than clover, they constitute a very valuable resource as food for domestic animals of all kinds, and especially hogs:—for it is within our own most agreeable experience that as good as any, if not the best bacon to be found in our country, is the ham of the *pea-fed* hog, as we have had opportunity to know.

These hams were tested by Maryland juries, who are among the best judges in such cases, and pronounced to be unsurpassable.

For very particular and conclusive evidence of the value of *pea-culture* for the cheap and rapid improvement of land, we need only refer the readers of this journal to its first number, pages 45 to 48. The facts are striking, and the proof conclusive. But we are prepared to show by what follows, that nearly thirty years have elapsed since we took the pains to write to that State for the most exact information, and for a supply of the peas for gratuitous distribution; yet has any one in Maryland or Delaware made a fair trial, and if so, with what result? If the warm weather has not been there of sufficient duration, or if attempts from any other cause have failed, why not proclaim it? False and even culpable must be the pride that would restrain a farmer from disclosing a disastrous result to any experiment which he may have deemed promising! As culpable as the mariner, who should fail to advise navigators of hidden rocks on which he had foundered, in seas deemed perfectly safe.

Last year we understood that Mr. Carter, near Upper Marlborough, Maryland, meant to give the Georgia pea a full trial, but of the result we are not informed.* In a word, is it not strange, that while the farmers in one State deem the culture of peas to be a resource of inestimable value, particularly as it may be made not exhaustive, but contributive to the fertility of their lands, farmers in States adjoining, with the same sort of soil, should not even make a fair and full experiment with it? Alas, how obstinate, if not fanatical in their local prejudices and habits! Norfolk is the only place where we ever saw the market supplied in a measure by *one-ox* market carts—an economical expedient that even the Yankee might imitate with advantage!

To return to pea culture, we give the following, which we published in Maryland, a quarter of a century ago, in answer to inquiries addressed to the well-informed and public-spirited writer, to whom we were recently indebted for the best account that has ever been given of the *process and profits of the turpentine business;* and which we published in the "FARMERS' LIBRARY," of which we may *now* say fearlessly, that it contained the greatest amount of agricultural scientific knowledge and practice that was ever offered at any thing like the same cost to the agricultural community of any country.

I have been myself in the habit of planting as many as five different kinds of peas for the last seven or eight years, and am acquainted with nearly as many more: of these varieties there are three that possess superior advantages as stock crops. Others are esteemed more delicate for the table, and are consequently more commonly grown for market. The former are what we here call the cow, the tory, and the black pea; each of which, I am in the habit of planting amongst my corn, and also alone. When planted with the corn, as is the usual method in this and the more eastern countries, they are dropped in the middle of the step, particularly when the rows are at right angles, and the corn is ploughed both ways. From the 25th of May to the 15th of June, is, according to my observations, the best time of

* We have since been informed, by himself, that the result was very favorable; and that he intended to repeat it on a larger scale this year.

planting them; and in some one of the following ways, with a preference in their successive order. With a single horse plough, such as we call "Cutters," or "Jacks," having small mould-boards, a furrow is opened in a cross direction to the way the field was last ploughed, as nearly in the centre between the rows as possible. This plough is immediately followed by a dropper, who is provided with the bowl of a common tobacco-pipe, which, if too large, is made, by packing something in the bottom of it, to contain from twelve to sixteen peas. And here I must observe that this or a similar provision is greatly necessary, both to insure a fine regular crop, and to save seed, which otherwise would be profusely or sparingly disposed of, according to the whim or pleasure of the dropper. In passing from one hill to the next, the hand has sufficient time to fill his measure from the vessel in which he carries the seed, as well as to drop them, without altering a common ploughman's gait. The peas are deposited in the newly opened furrow as near the centre between the corn-hills on either hand as possible; the dropper is followed by a similar plough, covering the seed with great regularity, to the depth of from two to three inches, and leaving a surface for them to come up on, *at least* even with the surrounding ground, which is no inconsiderable advantage. The facility with which an indifferent hand can thus keep up with a plough is evident, and of course the row is finished "*at* once."

In planting them in this way, it is generally calculated to give the corn two ploughings afterwards, in a transverse direction, to finish it; which working will be all-sufficient for the peas; and in poor land they will yield a more profitable crop than the corn; it is not, however, uncommon to give one of those ploughings, *the first*, in the same direction that the peas were planted, say two furrows on either side of the pea row, and unless the field is very grassy they will require no other work; for the share they will have in that *inevitably* given to the corn will be sufficient. Another way is common—to drop the seed with similar precaution, in the first or second furrow from the corn row, at the ploughing that it receives nearest the time thought best to plant, leaving the next furrow to cover them. My objections to this method, are, that the peas are not *in the middle of the row*, and they are consequently deprived of the benefits of the sun that they would *there* receive; and from their contiguity to one row of corn, this is materially injured by their ascending the stalks. It is also common to plant them in the last furrow in a row, at a seasonable ploughing, when the dropper has them to cover with his foot, which is performed with considerable expedition, by persons a little accustomed to it. Planted in these various ways, peas come to great perfection amongst our corn, not, however, without doing it some injury; but not always perceivable, and never in the same ratio that they are profitable, both to our stock and the soil on which they grow; having myself experienced by a succession of these double crops, the productiveness of the soil to increase fifty per cent. in a few years; their foliage, vine, large tap-roots, and shade, each separately and collectively, possessing meliorating qualities in a degree superior to any vegetable known to me.

When the corn is gathered, and soon after the first frosts, the hogs we intend to kill that winter are "turned in" on the peas, and with a feed of corn once or twice a week, they will fatten more kindly than under any other management common in this part of the country; and when slaughtered, their fat is solid and white; epicures say, that hogs thus fed make the most delicious bacon.

The comparative values of the three kinds before mentioned, according to my experience, are that the cow-pea, of a *light clay* color, is rather the most

prolific, the pods being much the largest, though not quite so thick set on the vine: they are also, I think, more inclined to vine horizontally, not attaching themselves so much to the corn as the others; consequently doing it less injury: and they are a little preferred by *laborers* as a diet, *who* give either kind a preference to any other vegetable production accompanying their meat. But they lack the durability of the other two kinds, and will never remain in the field without rotting, as the others will, until late in the winter.

The tory pea is of a *red clay* color. The etymological application of the name I have never been able to ascertain. They are also sometimes called "red rippers." These and the black pea possess very nearly the same qualities, with the exception that I think the black ones mature a little the sooner. Either will remain in the ground all the winter, and come up luxuriantly in the spring; indeed I have had them to stand tolerably thick the second year, when the land has remained that time in stubble.

I am in the habit of sowing rye, and sometimes wheat, following a corn and pea crop, after the hogs have consumed the latter, and have the following summer, after the grain is off, a fine growth of peas, suitable either to enclose or graze; a sufficiency having escaped the search of the hogs to seed the ground tolerably well; though not so regularly and thick as they might have been sown. I never sowed them in the spring, *as a fallow crop*, until the present year, when I did, intending them as a preparation for wheat and turnips, and of course have not, as yet, realized their benefit, though thus far they exhibit every anticipated advantage, and it is in this way that they may be estimated as an inexhaustible treasure, at least to Carolina. Strange as it may appear to the votaries of red clover and gypsum, yet it is my candid opinion, that by something like equal care and management, they are qualified to confer more lasting benefits, at least to the Southern States, than either, or a combination of those, has ever done for Pennsylvania, or any other of our northern sisters. When sown broad-cast, either to enclose or to cut for hay, of which they make more nutritious and heavier crops than any thing else, one and a half to three bushels of seed will be required to the acre; thin soils requiring the greater quantity of seed. From the 1st to the 10th of May is the best time to sow them, when to be employed in these ways. They will thus by the 15th or 20th of August, on land that would produce two barrels of corn to the acre, be knee high; just commencing to vine and bear, at which time they ought to be cut, or ploughed under: being too thick to be very productive of seed. An earlier sowing, which is recommended by some, I find, will not answer with the kinds I am speaking of; for as they are naturally of a very quick growth, requiring the very hottest sun to hasten them to perfection, if they are planted earlier than the time mentioned for sowing broad-cast, they will lack in proper time that portion of heat which they require; and will consequently stunt, and soon begin to shed their leaves: and this they will begin to do a little at the time mentioned as best to dispose of them with the scythe or plough, without bearing much: cold nights being, I observe, absolutely necessary to drive them to that natural function; and hence also the propriety *of late* planting when the crop is to be suffered to ripen, for the nights then become cool by the time their growth slackens.

I have also planted peas alone: a custom that is very common, where particular attention is paid to them, for fatting pork. They are planted in drills, five and a half feet apart, and require but one good ploughing and hand-hoeing, to make the crop. After planting them in this way on the 29th and 30th of May, I have put my hogs on them the 22d of September, when they were fine, and might be called half ripe. The hogs devoured

the green in preference to the ripe pods, and after consuming both, the vines were eaten by them with considerable avidity. Although I acknowledge this to be a slovenly practice, yet the land is greatly assisted by it. Independent of the benefit of the peas for hogs, when planted in corn-fields, they are frequently gathered from them for many other purposes by picking them into baskets, a tedious way, I acknowledge, a bushel being considered a tolerable task for one hand to gather and clean in a day; or they are pulled up by the roots, vine and all, and heaped into piles in the field, where the peas are threshed out with sticks; after which the vines may be housed or stacked, as winter forage for cattle: and in this way a hand may get from three to six bushels a day. But this method is not by any means void of serious objections: it being upon that ruinous and ungrateful, though common practice in husbandry, *of taking all without giving any:* totally depriving the land of the stubble, a poor pittance indeed, though one for which usurious interest is promised.

It is, however, very common to convert them into winter and spring food for horses or cattle, without picking the peas at all. This is a very expeditious mode, and it will, I allow, do well on land that receives annual assistance from the farm-yard, or is of that quality sometimes called "*inexhaustible.*" But as one or the other of these two plans must be resorted to for saving the peas, and as both are somewhat objectionable, I would recommend the last, with this difference—*let the vines be cut off quite near the roots* with a grass knife, sickle, or even a sharp hand-hoe, instead of pulling them up; this method is equally as expeditious as the other, and leaves to the ground the roots, which are a considerable benefit to it, and are useless in feeding. In feeding peas, freed from the pods, to stall cattle, at the rate of half a gallon twice a day, to each head, I have never known them to do the cattle the least injury; but with a plenty of long food accompanying this quantity, they have always fattened kindly. I have never fed my horses with them in this state, though I have frequently given them in the pods, at the rate of a heaping peck to each head at a feed, and without ever noticing any injurious effects to result from them.

Of the other varieties, which I cultivate altogether for culinary purposes, or for market, I need only say, that they are of the white kind, with black and gray eyes. They may be planted several days earlier than the time mentioned for the others, and they will bear much sooner: it is quite common to have them on the table about the first of July. They are a delicious and wholesome diet. As I have, probably in a more suitable place, neglected it, I shall here mention, that when planting among corn, as described, a bushel will plant from four to five acres. Having in the foregoing remarks given as succinct an account of my experience in pea crops, as the subject would allow, or a proper regard for the interests of *many* of your readers would justify, I have only to add, that although it may be both tedious and useless to a large majority, it may nevertheless arouse some few prudent farmers who were not accustomed to witness the advantages of the field-pea cultivation, and induce them to give this crop a fair trial: this anticipation will fully recompense me for the time which I have bestowed on this communication.

I can easily, and I will forward you, in the course of the winter, by way of Newbern, the quantity of seed peas mentioned in your letter.

Yours, most respectfully,

JOHN MACLEOD,
Of Johnston, near Smithfield, N. C.

September, 1822.

ANALYSIS OF SOILS.

CAN IT BE MADE BY COMMON FARMERS—AND HOW?

Enon, Clarke County, Ohio, February 7, 1849.

J. S. SKINNER, Esq.—*Dear Sir:*—The "Farmers' Club of Madriver Township," Clarke County, Ohio, have ordered me to make of you the following inquiries:

Have you a knowledge of any chemical apparatus that will, in the hands of a common farmer, who is unacquainted with the science of chemistry, answer any good purpose for analyzing soils? If so, where can it be obtained, and at what price?

An answer to the above is respectfully solicited.

Yours, with sentiments of high esteem, JOHN R. MILLER,
Corresponding Secretary F. C. M. T.

A copy of the above being addressed to that widely and well-known friend of American farmers, Dr. G. B. Smith, of Baltimore, brought promptly the following reply:

Baltimore, February 16, 1849.

J. S. SKINNER, Esq.—*Dear Sir:*—There is no apparatus or means by which a person entirely unacquainted with chemistry can detect the essential elements of fertility in a soil, other than those in universal use, viz.: practical tests by planting, cultivating, and observing the results. If a piece of land, by means of the usual cultivation, affords a good crop, the farmer knows that the elements of fertility are in that soil. If we had a simple machine that could develope and separate all and each of the elements, and place them before us in separate parcels, the person ignorant of chemistry would not know them—could not distinguish one from the other—could not weigh or measure them, that he might arrive at a knowledge of their relative proportions; and consequently it would not be of use to him. Indeed, it is yet matter of speculation what the real elements of fertility are! Nearly all the soils of the earth contain very nearly the same simple elements, varying only in slight differences of proportions or quantities. But if a single *element*, say lime, be supposed to be one of the fertilizing principles, and it is desired to ascertain if a soil contains it, the apparatus and means of doing so are very simple, and every farmer may use them as successfully as the best chemist. So in regard to the existence of vegetable matter. To ascertain if a soil contains lime and vegetable matter, take a handful of it from various parts of a field, mix it well together, and dry it thoroughly, that all the water may be evaporated. Then pulverize it, and weigh out an ounce of it. Put this upon a common fire-shovel, and heat it over the fire till the shovel and soil be red hot; then let it cool, and weigh it correctly. All that it shall have lost in weight was vegetable matter. Then wash the same parcel in hot water, filter it through any fine linen or cotton cloth, dry the earth perfectly as before, weigh it again, that its *exact* weight may be ascertained. Put it into a glass or earthenware vessel, and pour upon it diluted muriatic acid, (say one part acid to fifteen parts water, by measure,) stir the mixture. If it effervesces or foams slightly, there is lime in the soil, or some other soluble carbonate. Let it stand, stirring it occasionally, until all effervescence ceases, and the earthy matter settles to the bottom, leaving the liquor clear. Then pour the clear liquor carefully into another vessel, and pour some hot water into the first with the earth, stir it well, let it settle, and then pour the clear liquor into the other vessel with the first solution. Now take some potash in powder, and drop it in small parcels, say a tea-spoonful at a time, into the liquor, stirring it till the potash is dissolved: keep adding the potash as long as

there is any effervescence. Then let it stand to settle. When the white powder has settled completely, pour off the clear liquor, and throw it away; put the white soft mass on paper, that the water may drain off; then put the white mass on the shovel, heat it nearly red hot, set it aside to cool, weigh it, and that will give you the weight of lime in an ounce of the soil, if there be any. But for all practical purposes, the mere effervescence of the dried soil in the acid solution, is a sufficient indication of the presence of lime, and the degree of effervescence, slight or energetic, indicates sufficiently exact the quantity too little, or enough. If no white powder be obtained by adding the potash, then there is no lime in the soil.

A very slight scum of foam on the surface of the liquor, soon after adding the acid liquor to the dry earth, indicates that there is a moderate quantity of lime in the soil; a more active foaming indicates a greater quantity.

I admit that there may be other carbonates in the soil, and that there may be effervescence without the existence of lime; but generally, and almost always, it is carbonate of lime that causes the effervescence. It is also true that lime may be in the soil in other combinations, and not in the form of carbonate, and that in such cases there will be no effervescence; but it is in such cases always more or less inactive, and the soil requires the addition of lime, just as much as if it did not exist in those other forms. All other chemical analyses for ascertaining other elements of fertility in soils require a practical and skilful chemist to perform them. And, as far as my observation extends, all the labors of the public chemists in this country have resulted in no other good than simply ascertaining the fact whether a piece of land required lime to render it fertile or not; and that every farmer can do for himself, by following the above directions.

It must be borne in mind that the elements of fertility in soils are as yet not definitely ascertained. Some say carbonic acid is *the* element, others that ammonia contains it exclusively in the form of one of *its* elements, nitrogen, &c. Certainly, good horse-manure furnishes the most sterile soils with nutrition for almost all plants, even where lime does not exist; but it is still more fertilizing in a soil well limed. Now we know that horse-manure is charged with a large portion of ammonia.

There is one element of fertility not sufficiently attended to or thought of. The condition of a soil to retain moisture in the proper quantity, neither too much nor too little. Water exists in soils in two forms: it is in chemical combination in all the various parts of a soil; even dry sand has some of it in its composition, called water of crystallization. This is always in definite proportions, and can never be in excess or deficiency. The other form is free water, making the soil feel moist, or wet. In this form it is always varying in quantity, and its variations depend greatly upon the condition and composition of the soil, whether it be so mechanically worked as to enable it to receive and retain the water; whether this working be carried to a sufficient depth; whether the soil be so sandy or so shallow worked as to permit the easy evaporation of the water, or so clayey as not to permit sufficient evaporation. Now if free water from any cause be deficient in a soil, the latter cannot be fertile; if it be too abundant, the nutritious gases cannot be formed; hence both conditions render a soil sterile.

I fear, in attempting to answer your simple question as to the existence of means for ascertaining the fertility of soils, I have branched out so much that I have rendered the explanation more difficult of understanding than it ought to be—that I have rendered "confusion worse confounded." I wish you to bear in mind that I have written this for "plain farmers," not for scientific chemists to read. And you may also tell the plain farmers that the plain, unpretending description given them above for ascertaining the

existence of lime and vegetable matter in a soil, contains all the REAL information that they could obtain even from the most learnedly abstruse disquisition of scientific pomposity.

Yours, GIDEON B. SMITH.

We are in debt also to Mr. Morfit, of this city, for kindly favoring us with the following:

Philadelphia, Feb. 26, 1849.

MR. J. S. SKINNER:—*Dear Sir*—I received your letter of the 19th, enclosing one of inquiry, as to certain matters, from the Farmer's Club of Mad River, Stark County, Ohio, and as requested, herewith reply.

It would be impossible for any one totally unacquainted with the practice and principles of chemistry to perform a successful analysis of soils, or any other substance. If, as is often the case, a knowledge only of the presence or absence of lime is desired, this can readily be ascertained, the whole apparatus needed consisting of two beaker-glasses, a sheet of filtering-paper, a glass funnel, and three glass bottles containing respectively, hydrochloric acid, aqua ammoniæ, and oxalic acid. The whole stock can be purchased for about $2 to 2.50, from either Bullock & Crenshaw, Philadelphia, or E. N. Kent, New York.

The process of testing is as follows:—Digest the dry soil in one of the beaker-glasses, with hydrochloric acid for several hours, then add water, stir well and filter. To the clear solution running through add aqua ammoniæ in excess, and again filter from the precipitate thus formed. If now the clear liquid which passes becomes cloudy when treated with oxalic acid, the presence of lime is conclusively proven.

Yours, respectfully, CAMPBELL MORFIT,
Analytic and Consulting Chemist.

SCIENCE OF AGRICULTURE.

THE SORT OF WORKS NEEDED BY COMMON FARMERS—WHERE TO BE HAD, AND FOR WHAT PRICE.

MY DEAR SKINNER:—I have just finished Liebeg on Agriculture; it is no doubt a learned work, but too learned, and beyond the comprehension of 99 out of the 100 farmers; nay, we may safely say 9999 out of the 10,000. What we want is the A B C spelling-book for farmers, at present, and until we shall have agricultural colleges established in each State, a book that will tell us how much lime per acre we shall apply to clay lands, loamy lands, and sandy lands, and how often.

How many bushels of wood-ashes, leached or fresh, to some kind of lands, and how often?

How many square feet of compost to some lands, and the best kind of compost? Whether made from marsh mud and stable manure?

Whether salt or lime should be added, and how much of both?

Whether night-soil, and if so, how many pounds of sulphate of iron (common copperas) to 30 cubic feet of night-soil should be added to fix the ammonia; or how much plaster-of-Paris? and whether the soil should be burned and ground, or ground in its natural state? Can wood-ashes be mixed with night-soil, or does it, like lime, expel the ammonia? Now, these are simple questions, that any chemist can answer you. Why will you not ask, and give us plain farmers an answer?

From Liebeg we learn that more than half the ashes from corn-stalks are

potash. Hence we learn the beneficial influence of wood-ashes to corn. It is curious the effect wood-ashes have in producing white clover; cut off the top of a bog in the centre of a large bog meadow, and cover it with a good dressing of wood-ashes, and up comes a crop of white clover, while no white clover is within a quarter of a mile of said bog. Wood-ashes on all grass lands acts equally well, as it does with corn, and the benefits are as great as if nitrate of soda had been used, which benefits grass, but not cereals or roots, as I have tested.

Ever yours, R. L. C.

We shall not differ with our friend in what he says about Liebig. His works pre-suppose a knowledge of the subject upon which he writes, very much in advance of what is possessed by 999 out of a thousand farmers. It is therefore that we would advise all to commence much further back, if we may say so. Let them study the little work, Elements of Agriculture, which has been lately received under Mr. Vattemare's liberal system of international literary exchanges, and which was translated, with slight additions to adapt it to the common schools of America, by F. G. Skinner, Junior Editor of this journal. It was published by Messrs. Carey and Hart, and may be had for 25 cents. Let him also peruse the catechism remodelled in like manner, and now being republished in this journal. And yet more; let him study Petzhold's Agricultural Chemistry, which he will find in the first volume of the Farmer's Library, preceding Von Thaer's Principles of Agriculture.

In his preface to that work, Petzhold says, "A perusal of this little work with ordinary attention, will furnish the necessary amount of chemical information for the purposes of the farmer. He will learn enough from it to satisfy him that science is not to be despised, and if it *open his mind* to the reception of the important truths made known by the great chemists of the present age, *and enable* him to derive from the writings of Liebig, especially, all that has been discovered of late relating to agriculture, the design of the writer will have been accomplished."

Now let the reader bear in mind, that the Editor of the American Farmer, now Senior Editor of the Plough, the Loom, and the Anvil, *selected* the Essex Agricultural Society of Massachusetts, and referred to it for thorough and candid examination and report, all the volumes of that work when it was completed. He was sure of getting from them, not only a frank and impartial report, but one in which, from the character of its members, the public might well repose full confidence. Well, they say, of Petzhold's lectures, which make but a small part of this volume. "We consider it to be a master-piece of skill, in presenting to the most uneducated mind, in a perfectly clear and simple manner, the whole science of agricultural chemistry—*the practical value of this work to every farmer can hardly be over-estimated.* Von Thaer's work *is equally valuable in its way*, embracing the entire subject of agriculture."

Now we have only to add our own opinion, heretofore perhaps expressed—that no reasonable inducement would prevail with us to be without both these works, were we practical farmers in the country. For Van Thaer alone, (the English copy,) we gave in Boston, in May last, $12; and now we can furnish the two,—Petzhold and Von Thaer, bound in one volume,—for one-third of that sum, or $4; and Stephens' great work—the English copy, in three volumes of 1000 pages each, which has lately been sold at $35, we have in two more volumes, with notes by J. S. Skinner, that we will sell for $6,—or the three volumes—Petzhold, Von Thaer, and Stephens, for $9.

To Dyspeptics.—Twenty-nine years ago, we published in "The American Farmer" a very interesting, and we doubt not a very able memoir from Calvin Jones, M. D., otherwise known as General Calvin Jones, on the *diseases of indigestion*, and the *deleterious effects of the coffee of Mocha.* We wish we could make room for it in this journal. It was dedicated "to the two men of America most distinguished for genius, learning, and public spirit, De Witt Clinton and Samuel L. Mitchell, of New York, and *to the most* intelligent and judicious physician of North Carolina, JOHN BECKWITH, of Salisbury," the same who is the inventor of the pills called *Beckwith's Pills*, which we recommended in the March No. of this journal.

THE BEST SORT OF GOLD MINES, AFTER ALL.

Where to be found—Talbot County Report on Farms characterized—Local advantages of the Eastern Shore of Maryland and Virginia—Ought to change their staples—Nutritive and restorative matter afforded by different crops, and their effects on the prosperity of a country—Importance of farm accounts and registers—Importance of more attention to farm-yard manure—Instances of shallow ploughing practised by excellent farmers—W. Hambleton—Earl Stimson—Roger Brooke—General Emory—Legislatures ought to vote ploughs as well as swords—Farmers exhorted to *hold on and agitate*—Premiums awarded to Edward Covey and John A. Clough—Results of their management.

THE BEST SORT OF GOLD MINES, AFTER ALL, are to be found, when dug for with skill and diligence, in such fields as those to which the following reports refer; and in others like them, which men of sagacity and perseverance only know how to go on improving from year to year, content to look for gradual accumulations in what is too often overlooked—the constantly augmenting productiveness of their land; finding their greatest happiness, not in the sudden and fitful acquirement of riches, but in the daily consciousness that, by the exercise of manly virtues, they are laying up an honest independence for their families, at the same time that they are setting examples of priceless value to society. These are the gold diggings to which it were better that our newspapers should call the attention of our young men; for, while any fool may have the luck to draw a prize in a lottery, or to stumble on a lump of gold, we can but say of such men as Dr. CLOUGH and Mr. COVEY, who thus bear off the premiums for the best managed farms, "With thy understanding thou hast gotten riches."

With as much satisfaction in view of the spirit, as for the matter of the following report, do we copy it from "The American Farmer," for it indicates on the part of the committee a degree of meditation and heartfelt zeal for their subject, very different from the mawkish attempts at wit and fine writing, which sometimes take the place of that earnestness and judicious discrimination which befit such occasions. Such reports as these warrant the assurance, that a watchfulness for all the means of agricultural improvement, auspicious of the best fruits, has already taken good root in a community where such a committee can be found among the resident farmers of the neighborhood. It is in these various lights that we are accustomed to contemplate the proceedings of every association for the benefit of a pursuit essentially plain and practical, and requiring constant intellectual as well as bodily exercise. And here let us once more repeat, that if agriculture does not thrive, and estates rise in value, where the general principles of good management are thus exemplified and illustrated by farmers and committeemen, it cannot be for *want of knowledge*. And hence it is that scarcely anywhere do we find lands holding their own, and even appreciating, more than on the Eastern Shore of Maryland—and perhaps we might add, especially in Talbot County, where, without insisting on any necessary connection between them, it does so happen coincidently, that their *agricultural clubs and associations have been constantly kept up* for many years, and that, as we know, liberal support is there given to *agricultural journals!*

But here it may be proper, in justice to other localities not so much favored, and where improvement has been stationary, if indeed the movement has not been retrograde, to advert to the fact, that Talbot and the whole Eastern Shore of Maryland and Virginia, enjoy advantages perhaps unequalled elsewhere in our country, if not in the world, in their convenience to market by *cheap natural water conveyances*, whereby the looms and the anvils—the mills and the factories, of Baltimore, Philadelphia, Wilmington, and New York, are virtually placed near to their ploughs and their harrows.

Few persons who have not reflected on it carefully could believe in the value of such facilities for transportation of produce and manures, just as when we have been long in the enjoyment of blessings, even that greatest of all, good health, we are too apt to become insensible to their importance. But this is a subject (we mean the effect of cost of transportation on the value of land) to which we may not now turn, as it would lead us off too wide of these safe and lasting gold mines near at home, and within the reach of almost every industrious man.

Suppose, for instance, Dr. Clough's farm had been even twenty miles from navigable water or other cheap conveyance, such as canal or railroad, how could he have availed himself of the potato crop, thereby making tons where otherwise he must have made only bushels of grain in their stead? It may be supposed that the land which in 1847 produced him 800 bushels of potatoes, the half of which brought him $300—say 4 acres being $75 the acre—would in wheat not have yielded more than one-third that amount. It is dense population, produced by encouragement of various home-labor, which enables the farmer to incur the expense of draining his richest lands that otherwise lie waste—it is that, in a word, which brings the food out of the ground, and where facilities of quick and cheap communication with large markets exist, they have the same effect; but is it not the palpable interest of every farmer, that the people—the citizens—the weavers, the blacksmiths, the shoemakers, the tailors, the coal-heavers, and the ironmongers, who make up these markets—who constitute their customers—should be as numerous, as prosperous, and as easy to come at, as the wise policy of a paternal government can make them?—a policy which looks first and foremost to the development and cultivation of our *own resources*. But to return to this report.

For ourselves, we confess our inability to see why the good people of the whole Eastern Shore of Maryland and Virginia do not go more into the cultivation of hay and root crops, and the making of butter, and the fattening of cattle and sheep; a system which would tend to keep the refuse of the products of the land on the land, for its improvement—a system under which they would raise tons instead of bushels; seeing that none of them can retire, if they would, more than five miles from navigable water, and having in their immediate vicinity, (speaking in reference to easiness of communication,) at least a million of customers for their potatoes, carrots, beets, turnips, cabbages, apples, butter, lambs, mutton, and beef! It must be obvious to all, that in whatever proportion the products of the land are consumed on the land, provided the refuse or excrementitious matter be properly preserved and disposed of, the more will the strength of the land be preserved and augmented. Thus, an acre that will yield 25 bushels of wheat may bring the farmer thirty dollars, leaving him the straw for manure; but how much more valuable to him if that same acre will give him 400 bushels of potatoes, or 800 of turnips, or carrots, to be consumed on the farm, and converted into butter or mutton, supposing the money yielded to be no more than thirty dollars, with the addition of as much as pays for the extra labor?—for has he not got all the elements of fertility which were taken from the land to be restored to the land? Does not their locality at once suggest that they should turn their attention to bulky and perishable crops—to crops, in a word, that won't bear to be transported from the great West, rather than grain and other things which will?

Of the difference of nutritive value in the most common crops, the following table is derived from high authority. In Europe, it is found, according to experiments, that an acre which will produce one of these crops will produce the others, in the proportions here stated. It might, and probably would be different with us, on account of difference of climate, affecting some of these

products—as, turnips, for one—since in our country generally, we have not the moisture necessary to produce with certainty a root of which so large a portion consists of water, (92·5, according to Boussingault.) But he probably refers to the common field-turnip, and it is important that the inquiring farmer should always bear in mind the great difference in the quantity of nutritive matter contained, not only in different vegetables, but in different families of the same vegetable. Some of these may here be noted, at the cost of prolonging these hasty remarks, already too much extended: **1000** grains of Swedish turnips contains of nutritive matter, **64** grains; yellow bullock, **44**; white globe, **42**; mangold-wurtzel, **136**; sugar-beet, **146¾**; field cabbage, **73**; red carrot, **98½**; white carrot, **105**; parsnip, **99**; but for stock, the Swedish turnip is to be recommended, on account not only of its nutritive properties, but for its quality of keeping so well. Stephens, in his "Book of the Farm," which no farmer should be without, says, he knew the produce of a **25**-acre field to be stored in dry weather in November, in order that the land might be sown in wheat. "The store was opened in February, and the cattle partook of the turnips and continued to like them until June, when they were sold off, fat, the turnips being then only a little sprouted, and somewhat withered, but exceedingly sweet to the taste." We may as well mention here, too, in passing, that the larger the Swedish turnip in size, the more nutritive matter is found to be in a given weight of it. It is time to return to the table of nutritive matters in the produce of an acre of land, under the supposition that the acre which will yield one of these will yield the other. As, for example:

Crop.	Weight.	Starch and Sugar.	Gluten.	Oil.	Total of Nutritious Matter.
Wheat	1500	825	185	45	1055
Oats	1700	850	230	95	1175
Peas	1600	800	380	45	1225
Potatoes	9	3427	604	45	4076
Turnips	20	4500	540	"	5040
Carrots	25 "	5600	1120	200	6920
Meadow hay	1½ "	1360	240	120	1720
Clover hay	2 "	1800	420	180	2400

As in the general way crops ought to be of money-value in proportion to their nutritive qualities, does not this table show that that policy of government conduces most to the welfare of the farmer which draws the loom and the anvil near to the plough and the harrow; and placing the customers of the farmer where they can be supplied economically with that of which the earth yields largely, instead of that so-called free-trade policy, which drives to a distance the loom and the anvil and the lapstone and the trowel, turning the weaver and the smith, and the shoemaker and the bricklayer, into rivals, in order to get their bread, instead of customers who would buy their bread from the farmer? and is not this the reason why poor, sandy, stony lands in New England, covered half the year with snow, are worth more than the rich river bottom lands in Virginia, and the blue grass lands in Kentucky? But again we are digressing.

The emphatic manner in which the committee has suggested a special and liberal premium for the best form of keeping farm accounts and registers, adapted to the peculiar course and condition of Maryland husbandry, is worthy of particular commendation, and we may hope will not be forgotten. How is it possible, without such accounts, and without exact farm registers, to decide on the merits of particular farms or systems, or to proceed with confidence in any course of rotation or management? In these cases, for example, striking as has been the improvement as indicated by the increase of the crops, how much more satisfactory, if these gentlemen had been pre-

pared to state, more in detail, and with more exactness, how much there was of each crop *per acre!*—the cost and the wear and tear of animals and implements—the quantity of seed to the acre—the number of ploughings and harrowings of their corn crop—the kind of corn and wheat, the cost of labor, if hired, and, if not, the amount of capital invested in labor, &c., all of which are essential to any thing like an EXACT ascertainment of results.

Threadbare as the subject may seem to have become, it is always gratifying to find emphasis laid on the importance to be attached by every farmer to the increase of his store of *barn-yard* manure. Its accumulation is necessarily attended with so much labor, and demands such constant attention, that the best farmers are prone to shy it if they can, and to be casting about for *substitutes* of one sort or other; but he may rely on it, after all, his own stercorary should be his *great dependence.* It is to him what a good head of water is to a country miller, and without it he can no longer continue to manufacture good crops of wheat, any more than the miller can without water manufacture his wheat into flour; and therefore, even at the risk of dwelling too much on a subject well understood, (which of all things we most dislike,) we shall now place in juxtaposition with this interesting report, some remarks of a modern writer of great ability, on the *composition and value of barn-yard manure.* To relieve the reader, it may as well be read as a separate substantive article, well worthy of attention—not so much for its novelty, as for the very perspicuous manner in which it presents the important considerations involved.

In connection with the recommendation of the committee to bear more in mind the importance of deep ploughing, and believing, as we do, and have often insisted, that one very great defect of American husbandry, after all our talk about manures, is want of *thorough tillage;* the fact is recalled to our mind here, that Mr. William Hambleton—to whom high praise and (we believe) a premium was awarded on a former occasion, for exemplary management and great improvement of lands and crops, in the same neighborhood with Mr. Covey—never could be persuaded to plough his land more than four inches deep; and as one reminiscence leads to another, we are led at this point to turn back, only twenty-eight years ago! to the famous case of *Earl Stimson,* of the State of New York, of whose management and crops the Senior Editor of this journal obtained an account in person from Mr. Stimson, whom he visited in company with distinguished farmers from various States, then sojourning at Saratoga, and from Dr. Steele, then residing there.

Earl Stimson's farm consisted of 250 acres of land—100 of these in wood. In 1812, its average crops were, per acre:

Of Indian Corn	30	bushels.
Wheat	15	"
Barley	20	"
Oats	30	"
Hay	1½	tons.

In 1821—9 years after—the same farm produced:

			Bushels.		Total.
3 acres		Oats	60	per acre	180
8	"	Indian Corn	112	"	896
10	"	do.	90	"	900
4	"	Spring Wheat	34	"	136
6	"	Barley	60	"	360
31 acres produced					2472

bushels of grain, being an average of nearly 80 bushels to the acre, and his system was never to go, if he could help it, either more or less than three

inches. Being then, curious, as our reader may be, to know the nature of his soil, the following was given as the result of careful analysis, made, it is presumed, by Dr. Steele:

Water	9·5
Animal and Vegetable Matter	12·5
Clay	17·5
Silicious Sand	54
Carbonate of Lime	3
Soluble Salts	1
Oxide of Iron	1
	98·5
Loss	1·5

We shall reproduce the whole statement as soon as we can find room.

We shall doubtless have from the State Chemist, an exact analysis of the soils of the Eastern Shore of Maryland. There must be some special and explainable reasons why such men as Mr. Hambleton would plough only four inches deep.

We remember, too, that our lamented friend—that estimable and well-bred gentleman—Gen. THOMAS EMORY, in an agricultural address, stated it as an undeniable fact, that the general opinion and experience of the *Eastern Shore of Maryland* was against deep ploughing.* We merely mention these facts as we go along. Montgomery County, in Maryland, is entitled to the credit of first calling the attention of Maryland farmers, in a very emphatic manner, to the virtue of deep tillage, and perhaps the germ of the *substratum plough* is to be found in a letter from the venerable Roger Brooke, of that county, to the Senior Editor of this journal, twenty-eight years ago, in which he urged, in a very pointed manner, that to give encouragement for its invention was an object well-worthy the attention of agricultural societies.†

* In an address to the Agricultural Society of Queen Anne's County, (has it gone the way of all flesh?) from which we shall make more extended extracts, is this remark:—"Mr. Bordley, the only writer we have had, is not satisfactory on this subject. Judge Peters has somewhere said that he had understood that the land on this Shore would not bear deep ploughing. This is unquestionably the opinion (says General Emory) of all practical men with whom I am acquainted." It was the practice of the late John Singleton, of Talbot County, whose memory is worthy of the deepest veneration, never to plough his corn after planting. His reliance was altogether on the harrow.

† In 1821, *twenty-eight years ago!* he wrote to the Senior Editor of "The Plough, the Loom, and the Anvil," (then Editor and Proprietor of "The American Farmer," as follows:—

"Our agricultural implements generally, and ploughs particularly, have lately been much improved, and deep ploughing has been adopted by almost all good farmers. We however lack one implement from the operation of which it is believed we should derive many important advantages. I mean a proper instrument to follow the plough in all its rounds, and to open the bottom of the furrow, *so that we may stir the earth and render it pervious to a greater depth than can be done by the plough alone, and yet leave the vegetable mould near the surface where nature has placed it, and where it ought to be for obvious reasons.* The utility of such an operation will be readily seen by all who know the great length of roots which are thrown out by most vegetables, wherever they find sufficient depth of loose earth. I have for years had thoughts of putting in practice something of the kind, but not knowing exactly what would best perform the desired operation, added to a disposition too apt to delay the performance of what I know to be right—I have neglected it. Although it may appear at first view to be no difficult thing to construct something adapted to the purpose, yet I think it of consequence enough to claim the attention of the Maryland Agricultural Society, and worthy of a handsome premium, for the one that will, with a given power, break the whole width of the furrow to the greatest depth. Should it not be deemed worthy of consideration to the society, I hope some of our ingenious and public spirited mechanics will exert their inventive powers, to confer a benefit on the cultivators of the soil. I have thought of three coulters, or the same number of the tines of Beatson's

Now all we have to say further about these "best managed farms" is, that if a member of the Legislature of Maryland, present at a proposition of some slang-whanger looking for distinction and popularity by proposing a tax on the farmer, or what is the same thing, a draft on the treasury, to buy a sword for an officer in reward for his uniform promptitude and excellence in bloody battle-fields, we should move that at the same time there should be purchased by the State, at like cost, highly ornamented implements of agriculture, with silver or gold mountings and inscriptions, to be presented by the President of the State Agricultural Society to John A. Clough and to Edward Covey, and from year to year to those in each State distinguished by the award of their brother farmers, for "best management;" and if we could not make it appear that such a disposition of the taxes levied on the planter and the farmer would better comport with the real, well understood interests of a republican country, then would we relinquish for ever all confidence in the ultimate predominance of common sense, and sound reason, and just discrimination, and public virtue, over the love of vain-glory and the arts of popularity-hunting and humbuggery.

But let us exhort our friends in the country—those who begin to appreciate their rights and their power—to *hold on*. Better times are coming, if there is any thing in signs. What we want, and what we will have, is a policy that looks to the interests of our own country—to harmonizing all our own interests, and the cultivation of our own resources. Then will we force those who now levy on us fifteen millions a year to keep up military establishments, to establish better systems of industrial education for the people—systems under which the whole rising generation shall be taught the principles that essentially belong to all industrial pursuits, including, (most especially) *farming*, which is the basis of the prosperity of all others. It only requires that each man intending to live by the land, as you and your sons do, shall learn thoroughly *what the land is, and what can be done with it*. Having so learned, the farmer will apply himself steadily and effectually to the practical working of his occupation. Thus will he become certain of success, and success will render him independent, independence will again beget knowledge and respectability, and these will bring him power, for therein is it that "knowledge is power," nor is any sort of power honorable, reliable, or worth having, compared with that which is based on knowledge.

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scarifier placed in a triangular position, but this I leave to better judges, not doubting that if others attach the same importance to the operation that I do, something suitable to perform it *will be invented*."

The invention of labor-saving implements ought to take precedence of all other objects for agricultural premiums. One of the wisest and most benevolent farmers that ever illustrated the agricultural annals of our country—the late James Wadsworth, of New York—said on this subject, twenty-five years ago, "I am doubtful as to the expediency of small premiums for cattle. I think the raising of these animals may be left to self-interest. Suppose you take a hint from Napoleon, and offer *very liberal* rewards for great improvements in *agricultural implements?*" True, the Agricultural Society of that State appears not to have concurred with him in his opinion—as we see that for 1849, while they have offered 150 or 200 premiums for cattle, in sums ranging, many of them, from $10 up to $50, for agricultural implements, the offers are $2—some two and a "dip," yet under the head "Farm Implements" they offer $10 as the highest for any single one, and that only in the case of best wheat-thresher, the improvement of which would require ten times as much exercise of mind, and inventive genius, and expensive experiments, as buying or fattening a bull or a bullock. Let us take room here to repeat the suggestion that instead of returning small surpluses into the Treasury from the Patent-office, they should be expended in offering premiums for inventions of great and unquestionable importance in agricultural and mechanical industry. Here, too, is a field open for the employment of the thousands which the American Institute is accumulating, for—they know not what!

It is the want of this—want of direct and thorough instruction in the principles and the rights of their calling—that subjects farmers to be ruled so exclusively by lawyers and doctors, and to be taxed for the establishment of schools only to teach the art of—WAR AND BLOODSHED!

REPORTS OF COMMITTEES AT THE TALBOT COUNTY CATTLE SHOW AND FAIR,

Held at Easton, Maryland, November 15, 16, *and* 17, 1848.

REPORT ON FARMS.

The Committee on Farms, instructed by the Societies through their advertisement, proceeded to inspect those offered for premium, and in accordance with the specifications set forth, respectfully report:—First, of the farm of Mr. Edward Covey, near St. Michaels. For an account of Mr. Covey's practice in manuring, and system of rotation, and for other important information in connection with his management and success, they refer the societies to the following statement, drawn up and forwarded by Mr. Samuel Hambleton, Sr.:

"The first glance must have convinced the committee that mine is not a show farm; my small force forbids any attempt at embellishment. My main object has been to restore its lost fertility; how far I have succeeded you will be able to judge from your hasty review, and the following facts and observations elicited by questions put to me by one of your board. I purchased this farm in 1836, then containing 196 acres, at $15 per acre, and placed on it a tenant. The first crop was a little over 100 bushels of wheat, and 90 barrels of corn, and the crops the second year were rather less. One-third of these crops I received as rent. I settled on it in 1839. My first crop of wheat was 330 bushels, corn crop not recollected; the farm then in three fields. In 1841 it was divided into five fields, and I am now clearing up land for the sixth. In 1838 I added to my farm by purchase, 54 acres, at $22, and in 1840, 18 acres, at $20 per acre, so that the farm now contains 268 acres, at the average cost of $16·80 per acre; amounting to $4512. These two last parcels of land at the time of purchase, and as late as 1841, lay out unenclosed, as a common. Every year I have burned and applied lime from oyster-shells, one year as high as nine thousand bushels; every field has been dressed over. Occasionally I buy a few loads of manure in St. Michaels, and one year hauled out marsh; but of late my main reliance has been on my own farm-yard, which enables me to manure my corn cultivation every year. A few years ago I applied leached ashes, in all six thousand bushels; but not satisfied with their effects, have discontinued their use. Since 1841, my system, without much variation, has been two fields in wheat, one in corn, and two in pasture; clover-seed yearly on corn and wheat. I have in vain endeavored to ascertain the amount of my early crops. The committee will probably conclude that they were not bad, when they hear that with the aid of one thousand dollars in hand, they enabled me, after supporting my family, to complete my payments for this farm four years ago. The amount of my crops for the last three years, with the amount they sold for, or are worth, is as follows:

"1846. Wheat, 1384 bushels—Corn, no account—sold for $1800.

"1847. Wheat, 1150 bushels—Corn, 400 barrels—sold for $2150.

"1848. Wheat, 1500 bushels—Corn, 300 barrels—on hand, worth $2250.

"The average of those years, of wheat, is 1344 bushels—average, same time, receipts for grain, $2066. I sell beef and pork every year, but cannot say how much. My working force, principally hired, superintended by myself, is somewhat less than four efficient hands. I use horses altogether for labor. It will be seen that the original cost of this farm was $4515. Its present value is matter of opinion. If for sale, it would probably bring $50 per acre—$13,400. The committee, from these facts and estimates, will be able to form a tolerably correct opinion of the progress of improvement, and the means by which it has been made.

"I am, very respectfully, your obedient servant, EDWARD COVEY."

His method of draining is that practised generally in this county, by ditches combined with water furrows, from which the earth is carted either to the compost-heap, or to fill up some low spot in the field; and in the opinion of the committee has been tolerably well executed. His cultivation, as evidenced by the condition of the fields in which he had just seeded wheat, is highly creditable. As to grasses, the committee saw no evidence that he had turned any attention to them, further than mentioned in his statement; but

have from his known enterprise, good reason to hope that he will soon follow in the footsteps of his neighbor, Mr. Hambleton, of whom it was well said by last year's committee, that "had he no other merit, his attention to stock, and the provision he has made for their sustenance and protection, should alone entitle him to the highest consideration." Mr. Covey's stock, so far as seen by the committee, were ordinarily good. Of his farm buildings, fencing, and gates, they saw nothing in any respect particularly worthy of note. His utensils, it is presumable from the fact of his good cultivation and the amount of labor performed, are sufficiently good.

The committee next inspected the farm of Dr. John A. Clough, of whom they obtained the following statement:

"GENTLEMEN:—The farm on which I now reside, was purchased of the late Col. Wm. Hughlett, in the year 1833, for the sum of $2800, and contained at that time 162⅜ acres of land; since then, 1836, I have added to it by purchase, nearly ten acres, at a cost of $30 per acre, making in all about 172 acres, the arable portion of which is about 120 acres; the wood contains 42 acres, and there is in broken shore and marsh about 10 acres. At the time of purchase, it was cultivated on the three-field system, and was so continued until 1838 and 1839, when I divided it into five fields, which are not equal in size, owing to the inconvenient form of the farm. The fencing and ditching, at the time of purchase, were in bad condition; and the rent did not pay the interest of the purchase-money. The land in cultivation has been kept seeded with clover, timothy, and orchard grass, as fast as the manuring could progress; but that progress was slow, indeed, under the three-field system, in comparison with the five-field, as an exhibit below of the crops will verify. Under the five-field culture, one field was manured and put in corn, a fallow prepared in the summer for wheat upon clover; the corn crop was taken off the land in the fall, and both seeded in wheat, which was continued annually for three years; but at the end of that time, I thought it nearly as much expense to prepare a fallow as it was to cultivate a corn crop, owing to the formation of a heavy sod of blue grass, consequently I abandoned the fallow and put two fields in corn: one upon clover and grass sod, the other upon wheat stubble, using a fair dressing of manure to each, which last system (if it could be called one) destroyed the grasses about as fast as the one preceding had increased them. Therefore in the latter part of July, 1844, I concluded to try a stubble fallow, by turning in the stubble and weeds which had collected. The land being well and deeply ploughed, was rolled, and from 50 to 60 bushels slaked lime applied to the acre, after which it was harrowed both length and cross-ways the ridges, which nearly levelled them. The wheat was then seeded length-ways the rows, and ploughed in shallow, keeping the ridge in the same place where it was when limed. I have continued this system of stubble fallow ever since. One half the time, or every other year, seeding two fields on stubble, the other half one field in fallow and one on corn land. Two fields have been gone over on the above plan, viz:—of getting a crop of corn and three crops of wheat in succession from the same field, with a decided increase in product, as well as quality of the grain; and also an improvement in the general appearance of the soil, which I attribute to the action of lime and the vegetable matter ploughed in. All the arable land has been dressed over with Indian shell, mixed as they were with a dark rich mould, at the rate of 120 cart loads, of 12 bushels each, per acre—making upwards of 1400 bushels. The other manures used have been marsh, pine rushes, and soil from the woods; the manure of the farm-yard, stable, and hog-pen, sometimes used separately, at others in compost. The number of working hands, when I first took possession, were one man, two lads, and two small boys, except at harvest. The hands employed since, have been two men and two small boys. The number of horses or mules kept for work or riding, has been five throughout the whole period, and one pair of oxen. Under-draining to the extent of about one acre, has been tried with complete success; the materials used were pine trees sawed into 12-inch lengths, split in slabs about two inches thick; the ditches were then cut from two to three feet deep, two feet wide at top, and the breadth of a spade at the bottom. The slabs were then set in the bottom of the ditch, inclining from one side to the other; pine bushes were then put in until it was about a half or two-thirds full, and then the whole covered with earth, the sod put in first. No more cattle or hogs are kept than are requisite for the farm, and due attention is given to keep their pens well filled with marsh and the scrapings of the woods, to be worked into manure. I purchased of Col. Hughlett the rent corn for 1833, and received 18 barrels (90 bushels) of good corn, and 4½ of short, being one-third of what was raised. The crop of wheat not recollected, but altogether insufficient to pay the interest on the purchase-money. I have purchased and applied 6850 bushels of lime.

"I here give an account of my crops for almost the entire time of possession, some years unfortunately not recollected. The quantity of wheat stated is the crop raised; of corn, it is the quantity sold only. What was used should be added, which could not be less than 300 bushels per annum:

	Bushels Corn.	Bushels Wheat.		Bushels Corn.	Bushels Wheat.
1834	241½	140	1843	674	634
1835	286	91	1844	941	434
1837	410½	180	1845	910½	675
1838	386½	168	1846	1081	550
1841	642	368	1847	1110	869
1842	628½	454			

"1848 not yet ascertained, but supposed 1500 bushels corn, 900 bushels wheat.

"The crops of Mercer potatoes for several years have been worth about $100. In 1847, the crop was 800 bushels, one half of which were lost by rot; the others sold for over $300. That of the present year has in part been sold for $214.

"JOHN A. CLOUGH."

Between these two gentlemen, the committee have great difficulty in deciding. Both appear to have applied themselves with equal energy to their similar vocations. The one—Mr. Covey—on land worn-out and destitute of calcareous manures, almost entirely; yet by dint of great labor and expense, has dressed over his land heavily with those indispensable substances, and by their aid brought it to a point of fertility and profit rarely known in agriculture. The other—Dr. Clough—whose land was equally much reduced, yet favored by nature with resources in which the former was deficient, has applied them with a skill and industry not to be surpassed. His large purchases of lime show that he spares no proper expense, whilst his skill in cultivation is equal to that of Mr. Covey, as evidenced by a proportionate increase of grain. His more diversified and successful experiments, his attention to grasses, the productiveness of his soil, good condition of his ditches, fences, and gates, care of farming utensils, the neat and convenient arrangement of his commodious farm buildings, all combined, place him on an equality with the best farmers of the times, and in the opinion of the committee entitle him to the first premium. To Mr. Covey, they award the second premium, not because he has no competitor to whom it could be given, for the committee think in point of well-directed industry and careful management, he is second to no man, and have to regret that he has not been in possession of his farm a length of time sufficient to have enabled him to bestow more attention to his fencing and ditching, and to the grasses, so essential to a thorough system of farming.

The committee, nothing doubting that the Societies of Talbot in their action with regard to all suggestions offered in good faith, will be guided by the same enlightened liberality which has marked their past course, respectfully suggest for consideration, whether, inasmuch as experience clearly indicates the entire absence, in our community, of a simple and comprehensive system of farm accounts, it might not be well, in conjunction with such societies in other counties as may feel disposed to act with them, to offer a premium for the best that shall be submitted before their next annual exhibition. By the introduction of such a system, embracing within its range those prominent points which, in the progress of intelligence, have been admitted to have a bearing, the operations of future committees would soon be greatly facilitated, and solid information would be more rapidly and thoroughly diffused.

The committee cannot take leave of this subject without endeavoring to impress *on* the farming community of this county the great and primary importance of deep ploughing, so far as the nature of the soil will allow—as rich and fertile soils will admit of being broken much deeper than those that are poor and thin. But even on these latter soils, we must deepen the plough gradually if we wish to improve them in a permanent manner. If we stir the land at all, it is but reasonable that we stir it well. We cannot sow without ploughing. Does not good sense tell us all, that if it is necessary to loosen the soil imperfectly for the benefit of growing plants, it is more useful to do so in the best possible manner? Why do we fallow, but to give the field the benefit of repeated ploughings and harrowing, thus loosening perfectly every part of it, and permitting every particle of earth to be acted on by the rains, the dews, and the indispensable influence of light and warmth? The effect of all this stirring is observable upon the seed put into the ground, for all must have observed that the grain sown in a fallow field will germinate several days sooner than on one where the soil has not been so well prepared, and the growing plant will maintain its superiority for a long subsequent time. It is to be hoped, therefore, that our

farmers will turn their attention to this important subject, and give us the result of some well-conducted experiment, which will establish the difference in product between a well stirred or an imperfectly ploughed field. Of so much importance is this subject regarded in other countries, that experiments are there in process of execution to ascertain how far spade husbandry, as a farming operation, will compare with that where the plough is used; and as far as we are informed, although the expense is much greater, a corresponding increase of crop has nevertheless been the result. Their more numerous population gives them much greater facilities than we enjoy, and they have established the great practical truth, that a deep and perfectly stirred soil is an essential element of a farmer's success.

The subject of manure is another branch of agriculture of no less importance than the one upon which the committee have already at some length commented; and as equally deserving of all the consideration that the farmer can bestow upon this part of his most important vocation. All created things are so constituted that the perfect development of one almost necessarily involves the destruction and decay of its predecessor. This is the case with the long list of vegetable productions given us by Providence. The death of the one affords the aliment for the growth of its successor, and its perfection is much aided by the application of the decayed remains of the former; and the series by carrying out the rule, instead of becoming more and more degenerated, is only rendered more vigorous and healthy. Manure is, according to the experiments of chemists and scientific agriculturists, the organic remains of what has constituted vegetable life. Its application in this state to the germinating seeds and roots stimulates the tender plant to put forth all its powers for growth and maturity. That this is a law of creation, is dictated alike by observation, reading, and reflection. Men cannot violate it without loss, nor act upon it without remuneration. Such being the case, it becomes our duty to use all efforts to make so much of this valuable substance as we can possibly consume; not to be content with that made by our cattle in barn-yards alone, but to use as much time as is consistent with our other farming duties in collecting all else that will contribute to its increase. Providence has not stinted us to the use only of one kind of manure, but in His wise dispensation has enlarged the source from which it may be gathered, leaving it to the industry of man alone to make it commensurate with his wants. Within a few years the substances used for it have increased to a great extent. He must use an abundant supply of litter—draw muck, leaves, turf, scrapings of ditches, sods; indeed almost every locality has its own peculiar advantages to increase this kind of collection, and it would be very easy generally to double the quantity that under the ordinary course of farm management would be collected. Calcareous manures is another branch of this subject, upon which the committee will not touch, as they do not profess the scientific knowledge to treat it as it should be done. We have all used lime and marl, more or less, and know from experience that our lands can be brought to the highest point of fertility by their application, but the manner of action we are unable to give. This cannot be done until education is more generally diffused, and our farmers call the intelligence of the head to aid the labor of the hands. But the abundant use of these substances is of so much importance to the entire community, that the committee think it not inappropriate to state, that the recorded opinion of the most scientific and learned writers upon those matters, deduced from careful, exact experiments, is "That a soil full of calcareous matter never produces an unwholesome atmosphere." We cannot conclude without a word or two in reference to the benefits already conferred by the Societies in the improvement of our stock and farms; they promise to increase the value of our lands, and to augment the supply of the necessaries of life, and their moral operation is to make the profession of farming so respectable by products and profits that we will be taught by interest not to forsake it.

WM. HAYWARD, Chairman. JOS. B. HARRINGTON,
SAM'L. EMERSON, JOHN NEWNAM.
THOS. R. HOLLYDAY,

A PROLIFIC VINE.—In 1819, a single pumpkin-seed, in Herkimer County, New York, produced:

Pumpkins	50
Length of vine	730 feet.
Weight of pumpkins	434¼ lbs.
Weight of the vine	136 "
Weight of pumpkins and vine, from one seed	570¼ "

How many fold for one is that?

ON THE NATURE AND VALUE OF FARM-YARD MANURE.

I HAVE already noticed that to certain plants the atmosphere is itself a source of nitrogen, but it is not so to all, not even to the most important; the giving of nitrogen to the soil is, therefore, a most essential office of manures. To effect this, a variety of means have latterly been afforded to the farmer, as the nitrates of potash and of soda, the salts of ammonia, the decomposed excrements of sea birds, guano, and numerous other even more complex bodies, all of which serve the purpose, all of which promote the fertility of the soil and favor the growth of plants, when judiciously applied, but none of which possess *any real utility over the manure available on the farm, suitable to every crop, and most ready in its action. To this manure it is, therefore, highly important for the economical farmer to direct attention, in order that correct ideas may be formed as to the care which it deserves, and the relation which it bears to the crops, and feeding operations of the farm.*

If we consider the final application of farm produce, it will appear that comparatively little of it is absolutely removed from off the ground, and that by much the larger proportion is consumed within the limits of the farm, in the provisioning and stalling of the various animals. The corn which is sold, or the animals which are sent to market, remove from the farm certain quantities of inorganic materials and of nitrogen, which must be replaced, in order to sustain its fertility, and the cost of replacing which must be considered a necessary and fair deduction from their money price; but the straw of the corn crops, the tops of turnips and potatoes, contain a much larger quantity of those materials which need not be removed from off the farm, but, on the contrary, should be most carefully returned to the soil, to serve for the support of future crops of plants. It is similarly with the produce consumed by the animals as food. Each day's food serves but to replace in its organization the materials which are daily thrown off from its frame. The dejections and excretions of the animal must, therefore, represent the food which it consumes, and thus by returning to the soil all such materials, the sustenance of the animal is really deprived of any power of diminishing the fertility of the soil. I do not here consider the case of fattening animals, but only such as are sustained in a uniform condition and health; but the fattening does not affect the principle in any important degree.

Now these various materials, the straw of the corn crops, the tops of the potato and turnip crops, the excretions and dejections of the animals sustained upon the farm, all mixed and subjected to the reaction which soon sets in amongst their chemical ingredients, constitute farm-yard manure. It is made up of the remains and products of every kind of crop: it contains, therefore, the elements of every kind of crop. Its state is continually changing, as it is more or less rotted, and hence no two specimens of it would probably agree exactly in constitution, but still, as illustrating in a general point of view the nature of its elements, I shall add the results of analyses made by Boussingault of that which, in a half rotted condition, he puts out on his experimental farm.

The manure, in its usual form, contains in average **79·3** per cent. of water, and **20·7** of perfectly dry material.

The dry material contained:

	Richest.	Poorest.	Average.
Carbon	40·0	32·4	35·8
Hydrogen	4·3	3·8	4·2
Nitrogen	2·4	1·7	2·0
Oxygen	27·6	25·8	25·8
Salts and earth	25·7	36·3	32·2
	100·0	100·0	100·0

The ashes of this manure contain in 100 parts:

Carbonic acid	2·0
Phosphoric acid	3·0
Sulphuric acid	1·9
Chlorine	0·6
Silica, sand, and clay	66·4
Lime	8·6
Magnesia	3·6
Oxide of iron and alumina	6·1
Potash and soda	7·8

On comparing this with the analyses of the ashes of various grasses and cultivated plants, it will be at once evident, that every constituent which they require is present in the farm-yard manure. It is, therefore, of the most vital importance to those whose livelihood depends upon the produce of their farms to economize as completely as possible this valuable material. A dung-heap formed on the ordinary ground of the farm-yard, allows of the escape of the most valuable portions of the manure by drainage through the porous soil. By exposure to the weather during wet seasons, the most active of its elements may be washed away. These disadvantages may be removed at very trifling cost by the adoption of such modes of collecting and preserving the manure as are employed in other countries. The dung-heap should be formed upon an impervious floor of brick-clay or of cement, this to dip towards the centre, so as to form a shallow tank, toward which the floors of the various stables should have such inclination as would enable the drainings to be conveyed by suitable channels to the central tank. By such an arrangement nothing goes to waste; the liability to loss by rain is obviated, and even the smallest farmer will very soon find the cost and trouble well repaid by the improvement, as well in the quantity as in the quality, of his stock of manure.

I am not disposed to underrate the importance of the various artificial and foreign manures, the effects of which on the fertility of the soil have been in many cases wonderful, often by their activity producing results to which the farm-yard manure would be incompetent, and by their portability presenting, in many localities, a real advantage. Nevertheless, in the existing state of education in this country, it is, as I conceive, *far more useful to point out to the struggling farmer how to take advantage of the materials which now run to waste about his stables*, than to send him to lay out ready money, of which he generally has so little, for a fertilizer, of whose special properties and nature he is probably quite ignorant, and which has seldom any great advantage over well prepared farm-yard manure.—*Kane.*

THE DESIGNS OF PROVIDENCE,

IN THE DISTRIBUTION OF NATURAL RESOURCES FOR NATIONAL INDEPENDENCE.

In the formation of the world, as far as geological observation has enabled us to estimate, the distribution of *coal* made by Providence for *the use*, as we may suppose, of the countries respectively, is as follows:

In the United States	133,132 square miles.
Great Britain	11,859 "
Spain	8,408 "
France	1,719 "
Belgium	518 "
British Provinces in America	18,000 "
Making an area of coal formations of	168,636 square miles.

There are other countries in which coal is found, but the areas are not given. We have, however, the quantities mined, which, in **1845**, were :

In Belgium	4,960,000	tons.
Prussia	3,245,607	"
France	4,141,617	"
Great Britain	31,500,000	"
Austria	659,340	"
But estimate of America, both anthracite and bituminous, about	4,000,000	"
Making the whole produce of coals	48,506,564	tons.

Now, was this coal provided by an all-wise and overruling Power to be used, or to be left undisturbed in the bowels of the earth, there to sleep for ever, along-side of beds of iron ore, which it is fitted to smelt and bring into form—while we send away to foreign countries, because their people are so heavily taxed and so nearly starved to death that they (to keep from starving outright) can make iron a little cheaper than we can ? But every thing is not cheapest that costs the least in amount to buy it—as perhaps the planter and the farmer of the United States may find out, after they have been fleeced for another half century, to the tune of "*free trade!*"

[Entered according to Act of Congress, in the year 1849, by JOHN S. SKINNER & SON, in the Clerk's Office of the District Court of the Eastern District of Pennsylvania.]

THE AGRICULTURAL SCHOOL-BOOK.

FOURTH LESSON.

OF THE ORGANIC SUBSTANCE OF PLANTS.

1. THE organic substance of plants chiefly consists of woody fibre, starch, and gluten.

2. Woody fibre is the substance which forms the greater part of all kinds of wood, straw, hay, and chaff, of the shells of nuts, and of cotton, flax, hemp, &c.

3. Starch is a white powder, which forms nearly the whole substance of the potato, and about half the weight of oatmeal, wheaten flour, and of the flour of other kinds of grain cultivated for food.

Fig. 13.

4. Gluten is a substance like bird-lime, which exists, along with starch, in almost all plants. It may be obtained from wheaten flour, by making it into a dough, and washing it with water, (fig. **13.**)

The teacher will here mix flour with water into a dough, and wash it with water upon a piece of thin muslin tied over the mouth of a tumbler or other large glass, (fig. 13,) and will show how the milky water carries the starch through the muslin, and leaves the gluten behind, and how, after a time, the starch settles at the bottom of the water, in the form of a white powder.

5. The woody fibre is the most abundant in the stems of plants, and the starch in their seeds.

6. Starch also exists abundantly in the roots of the potato, and other similar roots.

7. Woody fibre, starch, gum, and sugar, all consist of carbon and water only.

8. As the leaves drink in carbonic acid and water, all these substances may be derived from their food.

9. Leaves return the carbonic acid to the air, because they do not require it to form woody fibre and starch.

10. The carbonic acid gas in the atmosphere would be exhausted by vegetation, if it were not continually renewed from other sources.

11. These sources are three in number.

First—From the breathing of animals, since all animals throw off a small quantity of carbonic acid from their lungs every time they breathe

This may be shown by breathing the air from the lungs for some time through clear lime water, by means of a small glass tube, or a straw, when the lime water will gradually become milky, as it does when pure carbonic acid is passed through it, (fig. 11.)

Second—From the burning of wood, coal, candles, &c., since the carbon which wood contains, when it burns in the air, forms carbonic acid gas just as pure carbon when burned in oxygen does.

Third—From the decay of vegetables and roots in the soil, since this decay is only a slow kind of burning, by which the carbon of plants becomes *at last* converted into carbonic acid.

12. Animals and plants appear to live for each other's support. Thus the animal produces carbonic acid, upon which *plants* live, and from this carbonic acid and water together, plants produce starch, &c., upon which *animals* live.

13. Water consists of oxygen and hydrogen.

14. Every 9 lbs. of water contains 8 lbs. of oxygen, and 1 lb. of hydrogen.

15. It is very wonderful that water, composed as it is of two gases, (hydrogen, which burns readily, and oxygen, in which bodies burn with the greatest brilliancy,) should put out all fire; but there are many substances, the composition of which is almost equally extraordinary.

16. For instance, it is extraordinary that *white* starch should consist of *black* charcoal and water only, and that sugar and gum should consist of the same elements as starch and woody fibre.

17. We may say, then, that all these substances consist of carbon, hydrogen, and oxygen.

The teacher may take this opportunity of explaining more particularly the word *elements*, contrasting the nature of the *elementary* bodies, hydrogen, oxygen, carbon, and nitrogen, *which cannot be separated or split up into more than one kind of matter*, with such *compound* bodies as carbonic acid, water, starch, and oxide of mercury, which *can be separated* into more than one.

18. Gluten consists of all the four elements—carbon, hydrogen, oxygen, and nitrogen—united to a little sulphur and phosphorus.

19. Plants obtain carbon, hydrogen, and oxygen from the air; but nitrogen, sulphur, and phosphorus they usually obtain almost solely from the soil.

Note. Hence the importance of adding to the soil manures which contain these three latter substances.

QUESTIONS.

1. Of what compound bodies does the substance of plants usually consist?
2. What is woody fibre?
3. What is starch?
4. What is gluten?
5. Which of the three substances is usually most abundant in plants?
6. Is starch found in the roots of plants?
7. What do woody fibre and starch, and also gum and sugar consist of?
8. May these substances be formed from the food which the leaves drink in?
9. Why do plants give off the oxygen of the carbonic acid into the air?
10. Why do not plants rob the air of the whole of its carbonic acid?
11. Whence do the supplies of carbonic acid come?
12. How is it that animals and plants appear to live for each other's support?
13. Woody fibre, starch, gum, and sugar consist of carbon and water only—of what does water itself consist?
14. What are the relative proportions of oxygen and hydrogen in 9 lbs. of water?
15. What is there wonderful about water?
16. What other substances are as remarkable?
17. Of what elements do all these substances consist?
18. Of what does gluten consist?
19. Do plants derive from the air all the elements of which gluten consists?

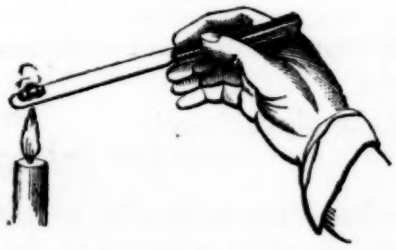
FIFTH LESSON.

OF THE SOIL ON WHICH PLANTS GROW.

1. A soil consists of an *organic* or combustible, and of an *inorganic* or incombustible part.

2. This is proved by heating a portion of soil to redness on a bit of sheet iron, or on the end of a knife, either in the fire or over a lamp. The soil will first turn black, showing the presence of *carbonaceous* matter, and will afterwards assume a gray brown or reddish color, as this black organic matter burns away.

Fig. 14.



The teacher will show this experiment, and will explain the meaning of the new word *carbonaceous*.

3. The organic part of the soil is derived from the roots, stems, and leaves of decayed plants, and from the dung and remains of animals and insects of various kinds.

4. Of peaty soils this organic part sometimes forms three-fourths of the whole weight, but of rich and fertile soils it does not usually form more than a twentieth to a tenth of the whole weight.

5. A soil cannot bear good crops if it does not contain a considerable proportion of organic matter. A rich soil generally contains at least one twentieth of its weight (5 per cent.) of organic matter.

6. When land is frequently cropped without manure, its organic matter diminishes in quantity; on the contrary, the organic matter increases when it is planted with trees, laid down to permanent pasture, or heavily manured.

7. The organic food which plants draw from the soil through their roots is supplied by this organic matter.

8. The quantity of organic food drawn from the land varies with the kind of plant, with the kind of soil, and with the season; but it is always considerable, and is necessary to the healthy growth of the plant.

9. It is then evident that if the soil is constantly cropped, and thus deprived of its organic matter, it must gradually become poorer.

10. The supply of organic matter must be kept up by ploughing in green crops, by growing clover and other plants which leave long roots in the soil, by restoring all the hay and straw to the land in the form of manure, or by laying it down to pasture.

11. The inorganic part of the soil is derived from the crumbling down of the solid rocks.

The teacher will satisfy his pupils—by drawing their attention to the decaying walls of buildings, to the heaps of what is called *rotten rock*, (decomposed trap or whinstone)—of limestone-gravel, &c., which are found at the foot of the hills—that rocks really do crumble down in the air.

12. These rocks consist of more or less hardened sandstones, limestones, and clays.

The teacher may exhibit specimens of
Sandstone—red and white, or other freestones;
Limestone—chalk and blue, or other limestones;
Clays—roofing slate, and the shale or shiver of the coal beds.

13. All soils consist principally of the same substances, viz., sand, clay, and lime.

14. If a soil contain very much sand, it is called a sandy soil; if much clay, a more or less stiff clay soil; if much lime, a *calcareous* soil.

The teacher will explain the new word *calcareous*.

15. A mixture of sand and clay with a little lime is called a loam; if much lime is present, it is called a calcareous loam; and, if it is clay with much lime, a calcareous clay.

16. *Light* lands are such as contain a large proportion of sand or gravel; *heavy* lands, such as contain much clay.

The teacher may illustrate this by referring to the different kinds of land which occur in the neighborhood.

17. Light lands are those most easily and cheaply cultivated.

18. Heavy clay lands that retain water derive more benefit from draining than light lands.

19. Light lands are frequently dry on the immediate surface, but too wet beneath—they also should be drained.

20. If a fall can be had, drains should never be less than 30 inches in depth.

21. The deeper the dry soil is made, the deeper the roots can go in search of food.

22. The roots of wheat, clover, and flax will go down three feet, and even turnip roots in an open soil will go down two feet.

23. Another object in laying the drains deep, is to enable the subsoil-plough to go down 20 or 22 inches without injuring them.

24. Besides carrying off the water, draining renders the soil pervious to the air, and allows the rain-water to sink through it, and wash out any thing that may be hurtful to the roots of plants.

25. Crops that at first look well suddenly fail when their roots reach the hurtful matter that often collects in the subsoil.

26. It often occurs that lands, either from their situation or quality, will not pay in cultivation, in which case they are generally laid down in permanent pasture.

27. If such lands are unprofitable from being too heavy and stiff, they may be made lighter by draining, subsoil ploughing, and by the addition of lime or marl when it is required.

The teacher will here explain to his pupils the difference between *common ploughing*, which merely turns over the surface soil; *subsoil ploughing*, which only stirs and loosens the subsoil; and *trench ploughing*, or trenching, which brings the subsoil to the surface.

QUESTIONS.

1. What does the soil consist of?
2. How is this proved?
3. Whence is the organic part of the soil derived?
4. Does the organic form a large proportion of the soil?
5. Can a soil bear good crops if it does not contain a considerable proportion of organic matter?
6. Does the organic matter increase or diminish in the soil, according to the way in which it is cultivated?
7. What food does the organic part of the soil supply?
8. Do plants draw much of their organic food from the soil?
9. How is it that land constantly cropped without manure becomes gradually poorer?
10. How is the supply of organic matter kept up?
11. Whence the inorganic part of the soil?
12. Of what do these rocks principally consist?
13. Of what do all soils principally consist?
14. How do you call a soil containing one of these substances in large quantity?
15. But if the soil contain two or more of them in large proportions, how do you name it?
16. What do you understand by LIGHT and HEAVY lands?
17. Which are most easily cultivated?
18. Which kind of land is most benefited by draining?
19. Do light lands sometimes require draining?
20. At what depth should drains be made?
21. Why should they be made so deep?
22. How deep do roots penetrate?
23. What other object is obtained by laying the drains deep?
24. For what other purpose besides carrying off water is land drained?
25. Do hurtful substances often collect in the subsoil?
26. When are lands usually laid down to permanent pasture?
27. How are stiff lands made lighter?

SIXTH LESSON.

OF THE INORGANIC FOOD OF PLANTS.

1. The inorganic or earthy part of the soil serves two purposes; *first*, it serves as a medium in which the roots can fix themselves, so as to keep the plant in an upright position; and, *second*, it supplies the plant with inorganic food.

2. In addition to sand, clay, and lime, the inorganic part of the soil contains in small quantities eight or nine other substances.

3. These substances are potash, soda, magnesia, oxide of iron, manganese, sulphuric acid, phosphoric acid, and chlorine.

4. These are exactly the same substances found in the ash, or inorganic parts of plants, only they form a much larger proportion of the soil than they do of plants.

5. The special difference between the inorganic part of the soil and that of the plant, is, that the former contains alumina, and the latter does not.

Here the teacher may direct the attention of his pupils to the following table:

The *soil* contains both silica and alumina.
The *plant* silica, but no alumina.
The *animal* neither silica nor alumina.

6. Alumina is a white, earthy, tasteless powder, which exists in *alum*, and gives their stiffness to pipe-clays and to stiff clay soils.

Here the teacher will show the preparation of alumina, by pouring a solution of common soda or of pearl-ash into a solution of alum. The mixture becomes milky, and

the alumina falls in the form of a white powder, which may be collected on a piece of linen or cotton cloth, and washed with water.

7. Plants can obtain all their inorganic parts from the soil only, for potash, soda, magnesia, &c. do not exist in the air.

8. This earthy matter, dissolved by rain-water, enters the plant by the roots in a state of solution.

Here the teacher will explain the new words *dissolve* and *solution*—showing how salt and sugar melt away or dissolve in water, forming clear solutions of salt or sugar, in which these substances can be recognised only by the sense of taste—but from which they may again be obtained unchanged by boiling off the water.

9. Fertile or productive soils contain every one of the inorganic substances mentioned.

10. A *fertile* soil must contain them all, because plants require them all for their healthy growth.

11. Plants do not require them all in equal proportion; they require more of some of the substances than of others.

The teacher may illustrate this question by directing the attention of his pupils to the following table, which he should cause to be copied upon a large piece of calico, and hung upon the wall of his school-room. He can thus readily point out, that, while 1000 lbs. of clover hay leave in all 75 lbs. of ash when burned, there are present in this ash 28 lbs. of lime, but only 20 lbs. of potash, and less than 4 lbs. of magnesia; and so on with the ash of the other kinds of hay mentioned in the table.

Quantity and Composition of the Ash left by* 1000 *lbs. of hay from

	Rye-grass.	Clover. Red.	Clover. White.	Lucerne.
Potash, . . .	9	20	31	13½
Soda, ...	4	5¼	6	6
Lime, ...	7	28	23½	48
Magnesia, . .	1	3	3	3½
Oxide of iron, .	trace	trace	½	⅓
Silica, ...	28	4	15	3¼
Sulphuric acid, .	3¾	4½	3⅓	4
Phosphoric acid,	¼	6½	5	13
Chlorine, . . .	trace	3½	2	3
	53 lbs.	74¾ lbs.	89½ lbs.	94¾ lbs.

This table will suggest to the teacher many instructive questions—which his pupils will readily understand and answer, when they have the table hanging before them.

12. All these substances, however minute in quantity, are necessary to the growth of the plant—just as the few ounces of nails are as necessary to the carpenter in making a box as the many pounds of wood which the box contains.

13. If then a soil is entirely destitute of any one of these substances, good crops can not grow upon it.

14. If the soil should contain a large supply of all the substances but one, and only a small supply of that one, those plants would grow *well* upon it which require only a small quantity of that one substance; but those which require a large quantity of it would be stunted and unhealthy.

15. Referring to the preceding table, we find that the ashes from 1000 lbs. of rye-grass hay contain but 7 lbs. of lime, whereas the same quantity of

Lucerne hay contains 48 lbs.; hence we may infer that a soil may produce very good crops of rye-grass, and yet be so deficient in lime as to grow very poor lucerne.

By referring to the above table, the teacher may exercise the understanding of his pupils, by asking for other examples of a similar kind, which an intelligent boy will readily give by considering the numbers on the table. Thus he may say lucerne requires more phosphoric acid than rye-grass does; therefore, if there be little phosphoric acid in the soil, lucerne will not grow so well upon it as rye-grass would do, and so on.

Once for all, it is recommended that all the analytical tables given in this book be printed upon calico, and suspended upon the walls of the school-room.

16. If a soil should be destitute of a considerable number of these inorganic substances, it would refuse to grow good crops of any kind whatever. It would be *naturally* barren.

17. There are many large tracts of country known to be naturally fertile, and others naturally barren.

18. In the fertile soils all those inorganic substances exist which our cultivated crops require; in the barren soils, some of these substances are wholly wanting.

This answer the teacher will illustrate by a reference to the following table.

Composition of Soils of different degrees of Fertility.

	Fertile, without Manure.	Fertile, with Manure.	Barren.
Organic matter,	97	50	40
Silica, (in the sand and clay,)	648	833	778
Alumina, (in the clay,)	57	51	91
Lime,	59	18	4
Magnesia,	8½	8	1
Oxide of iron,	61	30	81
Oxide of manganese,	1	3	½
Potash,	2	trace	trace
Soda, chiefly as common salt,	4	—	—
Chlorine, chiefly as common salt,	2		
Sulphuric acid,	2	¾	—
Phosphoric acid,	4½	1¾	—
Carbonic acid, (combined with the lime and magnesia,)	40	4½	—
Loss,	14	—	4½
	1000	1000	1000

The soil, of which the composition is given in the first column, had produced crops for sixty years, without manure, *and still contained a sensible quantity of all the substances required by plants.* That in the second column produced good crops when regularly manured,—*it was in want of three or four substances only, which were given to it by the manure.* The third was hopelessly barren,—*it was in want of many substances which ordinary manuring could not supply in sufficient quantity.*

19. A soil may contain all the substances required by plants, and yet be rendered barren by *too large a proportion of one of them*—such as oxide of iron, which in great quantity is injurious to the soil.

20. To improve a soil of the latter description, it should be thoroughly drained and subsoiled, that the rains might sink through and wash out the injurious matter. It should also be limed if necessary.

QUESTIONS.

1. What are the purposes served by the inorganic part of the soil?
2. Does the inorganic part of the soil contain other substances besides clay, lime, and sand?
3. Name these substances.
4. Are these the same substances that exist in the ash of plants?
5. What is the difference between the inorganic parts of the soil and those of plants?
6. Describe alumina.
7. Can plants obtain their inorganic parts elsewhere than from the soil?
8. How does this earthy matter enter into the plant?
9. Do all soils contain every one of the substances, potash, soda, &c., mentioned?
10. Why should a fertile soil contain them all?
11. Do plants require all these substances in equal proportions?
12. Are all these substances necessary to the growth of the plant?
13. What is the consequence if a soil is entirely destitute of any one of these substances?
14. Suppose a soil to contain a large supply of all the substances but one, and a small supply of that, what would happen?
15. Give an example.
16. What would you say of a soil destitute of a considerable quantity of these substances?
17. Do lands naturally barren exist?
18. How is the difference between these soils explained?
19. Can a soil be barren, and yet contain all the substances required by plants?
20. How do you improve a soil of this kind?

SEVENTH LESSON.

EFFECT OF CROPPING UPON THE SOIL.

1. If the same kind of cropping be carried on for a long time, the land will gradually become less and less productive.

2. If, for instance, a crop of wheat, or corn, or oats, is taken from a field year after year, it will at last become unable to grow any of these crops.

3. As the same crops draw always the same substances from the soil, these substances must gradually diminish and finally disappear from the soil so cropped.

4. Our grain crops especially exhaust the soil of *phosphoric acid* and of *magnesia.*

The teacher will illustrate this by a reference to the following table, representing the composition of the ash of several kinds of grain usually grown in this country—exclusive of the straw.

Composition of the Ash of Wheat, Oats, Barley, and Rye.

	Wheat.	Oats.	Barley.	Rye.
Potash and soda, .	37·62	19·12	20·70	37·21
Lime, ...	1·93	10·41	3·36	2·92
Magnesia, . . .	9·60	9·98	10·05	10·13
Oxide of iron, . .	1·36	5·08	1·93	0·82
Oxide of manganese,	?	1·25	?	?
Phosphoric acid, .	49·32	46·26	40·63	47·29
Sulphuric acid, . .	0·17	...	0·26	1·46
Silica, ...	...	3·07	21·99	0·17
	100·00	98·87	98·92	100·00

The teacher will draw attention especially to the large quantity of phosphoric acid in the above table, and will explain that, as the grain takes out more of this than of any other substance from the soil, numerous successive crops of grain must exhaust it of this more than of any other substance.

5. The exhaustion of any particular ingredients in the soil is to be counteracted by the return to the soil of those particular ingredients.

6. If, for instance, the phosphoric acid is carried off, it should be returned in the shape of ground bones, or guano, or some other substance abounding in that acid.

7. Any kind of cropping will in time exhaust the most fertile soil, if the crops are carried off the land, and what they draw from the soil is not again restored to it.

8. Every crop takes away from the soil a certain quantity of those substances which all plants require. If you are always taking out of a purse, it will at last become empty.

9. The farmer takes his money out of the land in the form of crops; and if he is always taking out and putting nothing in, it must at last become empty or exhausted.

10. If he put in the *proper substances, in the proper quantities, and at the proper time*, he may keep up the fertility of his land—perhaps for ever.

11. To maintain his land in its present condition, the farmer must return to it at least as much as he takes out.

12. To make his land *better*, he must put in more than he takes out.

13. His profit consists in this, that he takes off the land what he can sell for much money, and he puts in what he can buy for comparatively little money.

14. Thus, when I sell my corn, wheat, or hay, I get a much higher price for them than I afterwards give when I buy them back again in the form of horse or cow-dung.

15. As the farmer puts in what is cheap, and takes off what is dear, he can afford to put on his land as much as he takes off, and yet have a profit.

The teacher may avail himself of this occasion to point out how beautifully and bountifully the earth and the plant are made to work into the hands of the practical farmer, by *converting into valuable produce what he lays on in the form of a worthless refuse*, —and how they always do most for the skilful, the prudent, and the industrious.

16. These substances, returned to the soil by the farmer, are called *manure;* and when putting them in, the farmer is said to *manure* his soil.

QUESTIONS.

1. What is the consequence of the continuation of the same kind of cropping?
2. Give an example.
3. Why is this?
4. What substances does grain especially draw from the soil?
5. How would you remedy such special exhaustion?
6. How would you return the phosphoric acid, for example?
7. But with any kind of cropping may not even a fertile soil be exhausted?
8. How is this explained?
9. How is an exhausted field like an exhausted purse?
10. How is the farmer to keep his land in a fertile condition?
11. How much of the various substances must be put upon the land to keep it in its present condition?
12. How much to make the land better?
13. In this case, where is the profit to come from?
14. How do you mean?
15. Then the farmer may yet make a profit?
16. What do you call the substances which the skilful farmer puts into his land?

COMPARATIVE CONSUMPTION OF COTTON AND WOOL,

UNDER THE FREE TRADE AND PROTECTIVE SYSTEMS.

THE annual circular of the British Board of Trade gives the following statement of the

Exports of Packages from Liverpool to the United States for 1848, *and the three previous years.*

COTTONS.	1845.	1846.	1847.	1848.
New York	11,217	10,289	17,759	15,315
Philadelphia	2,464	4,253	6,073	4,357
Baltimore	293	192	1,075	677
Boston	3,354	3,601	5,805	3,305
New Orleans	816	924	2,267	4,070
Total	18,174	19,258	32,979	27,724
LINENS.	**1845.**	**1846.**	**1847.**	**1848.**
New York	13,445	13,064	14,943	14,001
Philadelphia	2,519	2,810	5,302	3,371
Baltimore	487	384	494	542
Boston	3,453	3,380	5,449	3,182
New Orleans	1,025	1,151	1,873	2,047
Total	20,929	20,819	30,061	23,143
WOOLLENS.	**1845.**	**1846.**	**1847.**	**1848.**
New York	9,114	7,017	16,369	14,068
Philadelphia	1,946	1,873	4,547	3,192
Baltimore	652	308	302	347
Boston	2,975	2,794	4,809	2,459
New Orleans	96	82	277	516
Total	14,793	12,070	26,301	20,582
WORSTEDS.	**1845.**	**1846.**	**1847.**	**1848.**
New York	4,449	4,945	15,888	13,091
Philadelphia	539	1,095	3,968	2,831
Baltimore	47	3	320	292
Boston	2,259	2,640	4,769	2,497
New Orleans	32	67	290	290
Total	7,326	8,750	25,235	19,010
BLANKETS.	**1845.**	**1846.**	**1847.**	**1848.**
New York	2,383	1,701	3,546	3,288
Philadelphia	437	340	778	560
Baltimore	88	77	145	143
Boston	98	48	278	214
New Orleans	50	58	118	228
Total	3,056	2,233	4,837	4,433

A glance at the above tables will show to all, says "The Dry Goods Reporter," why it is that we have written so confidently upon a rise on most styles of British fabrics. It will be perceived that Great Britain exported to us in 1848 a less number of packages by 25 per cent. than in 1847. The experience of all must also point to the fact, that *the major part of this decrease was in articles designed for the trade of last fall and this spring*, as the mania for importing extended throughout the whole of 1847, and was still running strong in the spring of 1848."

We desire most particularly to call the attention of the wool and cotton-growers to this statement, as it contains information of serious importance to them. The whole consumption of foreign cottons in 1848, over 1846, was little more than 8000 packages. Averaging them at 2000 yards each, we obtain sixteen millions of yards, the product of about four millions of pounds of cotton, or ten thousand bales, about enough to supply five factories of respectable size, whereas, had the tariff of 1842 been adopted as the *settled*

policy of the country, we should now have running, in addition to what are now in existence, one hundred, if not even two hundred, such factories, consuming two hundred, if not four hundred, thousand bales in addition to what is now consumed, while the superior productiveness of labor everywhere would enable every man, and woman, and child, to consume two yards where now they consume but one.

The increased consumption of woollens and of blankets is but 7000 bales, and averaging them at 500 pounds each, we obtain three millions and a half of pounds, as the increased demand produced in the wool market of the world by our change of system in 1846. Let us now see what was the increase produced by the adoption of the tariff of 1842. In that year we consumed about 35 million pounds. In 1846, four years after, the consumption exceeded 50 million pounds, having increased about one-half in the short period of four years, and it would have doubled in four years more, had the system remained unchanged. As it is, we have shut up numerous factories that would have consumed vast quantities of wool. We have ruined their owners, and we have so far diminished the power to consume woollen cloth, that the quantity *manufactured and imported* in 1848 was not as great as that manufactured and imported in 1846. The power to consume both cotton and woollen cloth has *diminished*, while our population has *increased* at least eight per cent., and all because the measures of the government have tended to separate the plough and the loom, and to increase the number of persons employed in the work of transportation and exchange, *at the cost of the producer.*

In all this, too, we wish our readers clearly to remark, we have claimed no allowance for the fact that the great reduction of imports took place in the latter half of the last year. Were we now to compare that portion of 1848 with the same portion of 1846, the result would be much more striking; and yet even that would not give the full truth, for the effects of famine and revolution in Europe, as shown in the prices of food, had not even then passed away.

The truth or fallacy of the doctrines of the administration must be determined by an examination of their effects on the power of consumption. If under the free trade system men can consume more cloth and iron than under the protective one, then are the lessons taught in the Treasury Report right; but if they can consume less, then are they wrong. We pray our readers to compare for themselves the power of consumption in 1846 with that which existed in 1842—the period of almost perfect free trade—and that which now exists, under the free trade system, with that which did exist in 1846–1847, under the protective one, and determine for themselves on which side is to be found the truth.

Cure for Pleurisy.—Wash and beat 3 or 4 lbs. of nettle-root—boil it with two gallons of hydrant, rain, or river water, until reduced to one gallon; strain it through a cloth and sweeten it with molasses. Take a pint every ten minutes, as hot as it can be drunk. Let an old woman stand by to give the decoction, and keep the patient well covered in bed; and if the above directions are strictly attended to, the pleurisy will be cured in ten hours or less, without a doctor, and a saving of $20 or more, according to the supposed length of your purse.

New York Average Crops in 1845.—Winter wheat, per acre, 14 bushels; oats, 26; barley, 16; rye, 9½; Indian corn, 25; buckwheat, 14; peas, 15; beans, 10; potatoes, 90.

MANUFACTURING BY SLAVE LABOR.

"South Carolina already has several flourishing cotton manufactories in operation. Among those recently completed is the Graniteville Mill, on the South Carolina Railroad, about 11 miles from Augusta, one of the largest interior cotton markets in the United States. This mill contains 9250 spindles, and 300 looms, and is said to be one of the most perfect mills in the country. The factory buildings are of granite, the dwelling-houses of wood, put up in good taste—the streets and grounds laid out and ornamented, and nothing spared which will add to the beauty of the scene, and inspire pride in the operatives. There is said to be scarcely a town in New England which will compare with it for neatness and beauty; and the old politicians who visit it, admit that it is indeed one of the bright spots in South Carolina, and that, if it proves to be successful, it will revolutionize public sentiment. Failure is considered out of the question; they have Rhode Island men to manage the concern, and the most efficient that can be procured. Labor is obtained at about half the cost of labor in New England, and the operatives are said to be little inferior to those in Rhode Island. The favorable location, with industry and good management, must secure profitable results. The expense of the whole establishment is $33 per spindle, including 9000 acres of land, dams, canal, water-power for 20,000 spindles, hotel, academy, two churches, and 90 dwelling-houses."—*Southern Argus.*

We take the above from one of our exchange papers, and it affords us a high degree of pleasure to give it to our readers as an evidence of the growing tendency, throughout the South, to adopt that policy which will tend to bring the loom and the anvil to the side of the plough. In no part of the Union is a change so necessary. Of all the States in the Union, there is no one, if we may judge by the statements contained in the various addresses to the Agricultural Society, that contains more of the natural elements of wealth and prosperity than South Carolina, and yet her population has been, of late, actually diminishing, and men have abandoned their properties because purchasers, even at low prices, could not be found. Let her pursue with spirit the new course upon which she is now entering—let her exert herself to induce men who have looms and anvils to come to the side of her ploughs and harrows—let her people combine their efforts to obtain for themselves the machinery requisite for converting their food and their wool into cloth, and the State will speedily occupy that position in the Union to which her natural advantages so well entitle her. She will then cease to import lime from Maine, or hay from New York, because increased population and wealth will enable her to make roads for herself, and she will then find that the community that is *least compelled to depend upon foreign markets, is the one that can sell to most advantage in those markets, and the one that is under the least necessity to buy in them, is the one that can buy most advantageously.* She will then, and not till then, buy in the cheapest market and sell in the dearest one, and to the advantage thus obtained she will add that derived from cultivating rich lands, yielding manure, by aid of which to improve the poor ones, instead of wasting labor on poor ones, becoming poorer every day by reason of her inability to return to the land the refuse of its products. She will then find that "population makes the food come from the rich soils," as now she finds that depopulation is driving men back to the cultivation of poor ones.

Food.—Nearly one half the weight of all vegetable productions which are gathered as food for man and beast, in their dry state, consists of carbon: the oxygen amounts to rather more than one-third, the hydrogen to little more than five per cent., while the nitrogen rarely exceeds two and a half per cent. of their weight.

THE HALF-BRED RACER.

A second-rate description of racer has lately been very prevalent in England, Newmarket excepted, known by the term "cock-tail," or *half-bred* horse, as he is called; but improperly so termed, because the stain in him is generally very slight indeed, and too often difficult to be traced. Many objections are raised by sportsmen, who are thorough racing men, and who wish well to the Turf, against the cock-tail racer, and for very good reasons. In the first place, if really half-bred, he resembles the royal stamp upon base metal, for no half-bred horse is deserving the name of racer, nor will he always stand the necessary preparation. Secondly, what are called half-bred stakes, some of which are very good, have been the cause of a great many frauds being committed, by bringing horses to run for them under false pedigrees, which will ever be the case, from the great difficulty of proving a horse to be thorough-bred, whose dam may have been purchased by accident, or in some clandestine way, and still perhaps of pure racing blood. Again, as there is no scale by which the degree of impure blood, which qualifies a horse for these stakes, can be measured, the breeder of the cock-tail, of course, avails himself of the parent stock in which the slightest possible stain can be shown, which indeed has been attempted to be shown, in some of the best race-horses of later times. In this case, an animal is produced against which no half-bred horse, in the proper acceptation of the term, has a chance, and he sweeps the country of all the good stakes; and some such horses (Habberley, for example) have proved themselves superior to many of the thorough-bred racers of their year.* But the breeding of horses for these stakes is any thing but beneficial to the country, the great object of racing. It encourages a spurious race of animals, often possessing the faults of the blood-horse without the strength and activity of the hunter, and it was for the latter description of

* The general and generally well-founded opinion in England is, that no cock-tail or under-bred horse can maintain a long contest against a thorough-bred. If he is forced to encounter long and repeated struggles, nature denies him the power of performance—as they say in that case, "out comes the black mare." But there are instances in sporting annals, that look like exceptions, and such as would seem to show that sometimes it depends on whether the dam, supposing her to be cold-blooded, breeds closely after the horse, or after herself? Walk-in-the-water, for example, one of the most successful and famous race-horses at all distances, that ever figured in the Western country, made a good race at Nashville, when he was eighteen years old; and his history was substantially as follows:—His groom—Peter Faggan—was a free colored man, who fell in debt to a Mr. Weaver, who placed the account in the hands of a collector. Weaver was riding a little pacing chestnut mare, in company with Allen J. Davie, to whom Sir Archy then belonged: Davie hearing Weaver ask the collector if he had made that money out of Peter Faggan, and the collector answering no, and he doubted if he ever could, said jestingly to Weaver, "You had better take it out in *music*." It seems that Faggan could not only make the most graceful bow, but drew the sweetest bow of any man in his bailiwick. Weaver demurred to the music, whereupon Davie told him if he would go home with him that night, he would let Faggan pay him with a chance of his *mar* to Sir Archy. It was agreed to, and the celebrated old Walk-in-the-water was the produce. When he became so highly distinguished, this little chestnut pacing dam was hunted up, and bred again to Sir Archy more than once, but with all, except the first produce, "out came the black mare." She bred after herself, and the subsequent produce all proved to be dunghill. Her dam too was a country pacing mare. We dare say our old friend Panton, if alive—and such men should never die or lose their faculties, if we could help it—could tell many interesting particulars of old Walk-in-the-water, the cock-tail.

It was only to show that a cock-tail may be game that he was made to "burst his cerements" for this occasion.—*Editors P. L. & A.*

horse that this stake was first intended. *Bonâ fide* hunters' stakes would be advantageous, if *open to all horses* bringing certificates of their having been regularly hunted throughout a season, but not merely ridden by a boy to see a fox found; and giving no allowance to the horse called "half-bred." Let the best hunter win, which would encourage the breeding of strong thorough-bred horses, which make the best hunters of any—a fact no one who has ridden many of them will deny.*

THE HUNTER.†

GENERAL DIRECTIONS TO BE FOLLOWED.

There is no description of horse which could be applied to so many purposes, racing excepted, as the powerful English Hunter. Setting aside his own peculiar services in the field, he is fit to carry a man on the road, on the field of battle, and he answers for every kind of draught. Indeed, we are inclined to believe no horse would equal him in ploughing; and as for road-work on harness, either slow or fast, nothing could touch him, in a carriage properly suited to his powers.‡

We will, however, set forth what we consider the best properties of the full-bred and the half-bred hunter, as also the most probable means of breeding each kind to advantage; at the same time venturing an opinion, that, when their individual capabilities are put into the scale of excellence, the balance will incline to the former.

One great obstacle to the general success in breeding hunters is, not so much the difficulty of access to good stallions, but of making breeders believe that it would be their interest to send their mares to such as are good, although at an extra expense. Most rural districts, in other respects favorable to horse-breeding, swarm with covering stallions, the greater part of which have proved very bad racers; but which, falling into the hands of persons who are popular characters in their neighborhood, and covering at a low price, get most of the farmers' brood-mares sent to them, their owners never reflecting, as they gaze upon these misshapen animals, that Nature will not go out of her course to oblige them, but that, in the animal creation, "like begets like." Neither does the evil stop here. So much is this made a matter of chance instead of one of judgment, should the produce of a mare sent to one of these bad stallions be a filly foal, and she proves so defective in shape and action as to be unsaleable at a remunerating price, she remains the property of her breeder, and in time becomes herself a brood-mare. What, then, can be expected from such produce? Why, unless chance steps in and supplies the defect of judgment, by the procreative powers of the male, in the case of a better sire being selected, so far exceeding those of the female as to produce a foal free from the defects of the dam, another shapeless, unprofitable animal is produced.§ Neverthe-

* *Weatherby's General Stud-Book.* To assist in the detection of spurious blood, and the correction of inaccurate pedigrees, is the chief purpose of this excellent publication, now increased to a third volume, and forming a part of every sportsman's library.

† We give this chapter the sooner, because in breeding a good hunter a farmer gets a horse good at all work.

‡ When the "Woollens Bill" was under discussion in the House of Representatives, John Randolph said he would "at any time go fifty yards out of his way to kick a sheep!" Fanatical as he was, or pretended to be, in his aversion to that most unoffending of animals, he was as much so in his admiration of the bred-horse, whose "slouching walk" he used to say would "tell even in the plough in a hot summer's day."

§ Universal suffrage and the love of popularity are two of the things good in the use

less, in the course of time, perhaps this produce, if a female, however bad she may prove, is also bred from, and thus a succession of shapeless horses is produced, to the certain loss of the breeder, and much to the injury of the community. Under the most favorable circumstances, and with the aid of good judgment, we cannot consider horse-breeding to be a certain source of gain; yet there are many inducements to try it as one branch of rural economics. The money goes out a little at a time, or by degrees, and therefore it is suitable to such occupiers of land as cannot embark in more extensive speculations, and it returns in a lump, oftentimes at a most welcome moment, and, in many instances, of sufficient amount to render the average of former less profitable years sufficient to cover expenses, if not to leave a profit. There is likewise another inducement to breeding horses; we mean the pleasurable excitement inseparable from all human speculations, from which more than an ordinary return may be looked for, which is the case here; added to the nearly universal interest attached to the breeding and rearing of every species of domestic animals.

With respect to brood-mares designed for breeding hunters, we admit that circumstances, not always within control, have their weight. An occupier of land is possessed of a mare or two which he thinks *may* breed hunters, and having them, it may not be convenient to him to replace them by those which might be more likely to breed good ones. But the choice of a stallion is always within his control, and he should not spare trouble, and moderately increased price, in his selection. It is well known to all

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and bad in the abuse of them. The fear of their popularity keeps State Legislators from enacting a few wholesome regulations to improve the breed of horses. There ought to be, in each county, commissioners, known judges of the horse, who should assess the rates of *licences for keeping public stallions*, and they should be regulated by a sliding scale, making the tax lighter in proportion to the excellence of the horse, ordering all inferior brutes to be altered or shot, as contraband of war. In Virginia, with a conservative and improving discrimination, which has always characterized her legislation, and carried her forward to such an admirable development of all her resources, they lay the tax on the *owner*, and not with any reference to the qualities of the horse—making the owner of the most magnificent stallion, even a Timoleon or a Sir Charles, pay as much as he who advertises for public use a beast better suited to be given to hounds than to mares.

While on this subject of legislation for the improvement of the horse, we cannot forbear—and would not if we could—quoting a beautiful letter (at which he is so inimitable) from our old friend, CHRISTOPHER HUGHES, then *Chargé d'Affaires* at Copenhagen. "Shall auld acquaintance be forgot?"

It had been made our pleasing duty to communicate to him, then on leave of absence, and on a visit to Baltimore, the unanimous resolutions of the old Central Course Jockey Club, inviting him to attend one of their regular biennial race meetings; and all who partook of them and yet *survive*, remember what delightful re-unions they were for not a few of the *elite* of the land. Hughes was sick, and could not attend, but said, "I am not the less sensible of the amiable feeling which has dictated this kind mark of distinction and of recollection. I am gratified at such proofs from so many of my old friends and beloved associates, that I still hold a place in their cordial and affectionate memory. Twenty years have made sad ravages among those who *started with us!*" Since then fifteen years have been piled on the twenty! In the meanwhile, Time has not stayed his ravages. Alas! where is the amiable and gentlemanly Proprætor?—where "The Napoleon of the Turf?" *Cum multis aliis!* But for another quotation; for who knows how long he may remain to write, or I to quote him? "You do justice," said Hughes, "to my opinions on the *horse!* They are more than opinions: with me it is instinct to love that noble animal! I consider the horse as the creature in animated nature next in importance and in *dignity* to man: and I know no animal more degraded than the man who *undervalues* or *over-works* the horse! Nor are there many subjects more worthy of a humane and enlightened legislation, for improvement and protection, than is this gallant and generous and useful animal, which most men admire, all use, and, alas! too many abuse."

hunting men, that the stock of certain horses have been remarkable for making good hunters, (we could name many of present and past times,) and that there are such horses always to be found, on seeking for them. A few pounds extra, laid out by the breeder in putting his mares to such horses, are sure to be amply repaid; for the produce would be generally sought after and purchased, even previously to their being tried. Englishmen know of no such restrictions, nor do we wish they ever should; but the interference of the governments of several European states as to stallions for the use of their respective countries, reads us a useful lesson on this head; for it is well known, on the other hand, that a great number of stallions to which English hunting mares have been put, have been equally remarkable for begetting soft, infirm stock, quite unequal to endure, for any length of time, the severe work of a hunter. It should also be borne in mind, that even a first-rate racer may not be a propagator of first-rate hunters. The former is called upon to exert his powers on very different ground, and under very different weight to the latter, and the action which may suit one may not suit the other. This accounts for the stock of certain thoroughbred horses, which were very indifferent racers, proving very excellent hunters. We have already given it as our opinion, that a cross of Arabian blood is a great desideratum in that of an English hunter, and we need not urge this point further; but if breeders would reflect, that the expenses of rearing a bad colt equal those of rearing a good one, they would attend more than they do to the following nearly unerring directions.

First, Observe peculiarity of shape in horse and mare. As length of frame is indispensable in a hunter, if the mare be short, seek for a stallion likely to give her length. Again, if the mare be high on her legs, put her to a short-legged stallion, and *vice versâ;* for it is possible that even a hunter's legs may be too short, a racer's certainly may be. In fact, to form a complete hunter, it is necessary he should be more perfect in his shape than a racer, which will admit of imperfections that would quite disqualify the other.

Secondly, Look to constitution. As no description of horse endures the long-continued exertion that a hunter does, this is a point to be attended to. But it may be overdone. Horses of a very hard nature, very closely ribbed up, consequently great feeders, with large carcasses, seldom make the sort of brilliant hunter now the fashion in England. Besides, one of this description requires so much work to keep him in place and in wind, that his legs must suffer, and often give way when his constitution is just in his prime. Horses with moderately sized carcasses last longest; and, provided they are good feeders, will come out quite as often as they ought to do, and are invariably good winded and brilliant, if well-bred and of good form, with a few other requisites. We never saw a very closely-ribbed, large carcassed horse brilliant as a hunter, and we know such form is not approved of in the race-horse.

Thirdly, and *lastly*, let the breeder of any kind of horse be careful in avoiding either sire or dam that has proved constitutionally infirm. As has been already shown on very high authority, perfect or defective conformation is not less likely to be the result of a proper or improper selection of horse and mare, than disease to be inherited from parents that have been constitutionally diseased, or health from such as have been healthy. We could name stallions whose stock have been blind; others afflicted with splents, curbs, and spavins, and a mare which produced three roarers by three differerent sires. But it may be said, that splents, curbs, and spavins are the result of malconformation of the parts. Granted; but avoid all such

malformation which is quite apparent to the eye, in a breeding stud. It may perhaps be carrying this objection too far, were we to say, we would not breed from a mare or horse which had become groggy or lame in the feet from diseased navicular joints. Had the feet been more vigorously constituted, perhaps such lameness might not have occurred; yet it is but too probable that here the predisposing cause may be traced to over-severe treatment, and not to constitutional defect.*

TRAINING OF COLTS.

Next in importance to the judicious selection of sire and dam, is the rearing of the colt which it is intended should make a hunter. It was the remark of a gentleman, who kept fox-hounds more than half a century, that "great part of the goodness of a horse goes in at his mouth," and nothing is more true. In the work called "Nimrod on the Condition of Hunters," (p. 223, first edition,) is the following passage:—"It is my confirmed opinion, that unless a colt be what is called 'deformed,' it is in the power of good keep, exercise, and physic, to make him what is termed 'a fine horse,' and one which will sell for a large price, either for harness or the saddle. No one who has not witnessed it, is aware of the improvement in shoulders, thighs, gaskins, &c., from good old oats, accompanied by regular work and proper riding." Breeders of hunters may be assured that such is the case; and that it is of little use to breed colts with the expectation of their making first-rate horses, unless they keep them *very well* in their colthood. They should also be treated *as horses* at a very early age. They should be ridden gently, and by a light man, or boy, with good hands, at three years old, across rough ground, and over small fences; and at four they should be shown hounds; but they should only follow them at a distance, and after the fences are broken down; for, if put to take large leaps at that tender age, they are apt to get alarmed, and never make first-rate fencers afterwards. Above all things, avoid getting them into boggy ditches, or riding them at brooks; but they should be practised at leaping small ditches, if with water in them the better, in the middle of a field, the rider putting

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* We are clearly of opinion, that, in general, too little is thought, and great mistakes made, about the proper *condition* of the stallion, by which we mean the state of his system when employed for the purpose of procreation. At this season, in order to catch the vulgar eye, they are too much pampered—kept too fat—and take too little exercise. A remarkable instance once occurred in England, illustrative of what we mean. George IV. when Prince of Wales was fond of the chase, and rode a hunter, an entire horse, of unequalled excellence. In admiration of his great powers, he caused a few of his mares to be bred to him soon after the hunting season was over, and before he had lost his hunting condition, and the produce, on coming to maturity, proved every way worthy of their sire. But when he had ascended the throne, and relinquished the chase, the same horse being pampered and kept, and in great demand as a stallion, failed altogether. Being loaded with flesh, without exercise, and over-tasked in the breeding stud, his stock shot up into lank, weak, leggy, awkward, good-for-nothing nags, to the ruin of the horse's character as a stallion.

It must have been in reference to this effect of *condition* at the time of procreation, that Diogenes said to a stripling, somewhat crack-brained and half-witted, "Surely, young man, thy father begot thee when he was drunk;" and Shakspeare intimates the same thing where he makes a hero taunt his enemies with the remark, "For ye were got in fear." For these suggestions we are indebted to a correspondent (G. B.) of "The Farmers' Library." We know not whether he does us the honor to read this journal. We have called for him—so you may call spirits from the vasty deep, but will they come when you call?—*Editors P. L. & A.*

them at them in rather a brisk gallop. This gives them confidence, and, the natural result, courage. With respect to the use of the bar, and teaching colts to leap standing over it, the practice is now condemned, and the system of letting them become timber jumpers, by taking it, as it comes, in crossing a country, is preferred, the present rate of hounds not admitting of the time occupied in a standing leap.

Some sportsmen adopt, and we believe with good effect, what is termed the "circular bar." Every description of fence that a hunter is likely to meet with is placed within a prescribed circle of ground, and in this is the colt exercised or "lounged," as the term is, the man who holds him standing upon a stage in the centre. As another man follows him with a whip, he is forced to take his fences at a certain pace; and, in a very short time, a good-tempered colt will take them with apparent pleasure.

At five years old it is customary to consider a horse as a hunter; but we are inclined to demur here. It is true, that if a colt has been very well kept, on the hard meat system, he is enabled to go through a good day's work with hounds at five years old, being quite equal to a six-year-old which has been kept on soft food, and not sufficiently forced by corn; yet it is always attended with danger of injury to his joints and sinews, if not to his general constitution; and we cannot pronounce a horse to be a hunter until he has passed his fifth year. As muscular action, however, produces muscular growth, he should not be kept in idleness during his fifth year, but should be ridden to cover, or with harriers, before Christmas; and when the ground gets dry and light in the spring, a good burst with fox-hounds may not do him harm. We do not, however, consider any five-year-old horse fitting or safe to carry a gentleman over a country, as he cannot be sufficiently experienced to take a straight line.

We have known some masters of fox-hounds who have preferred purchasing yearling colts, or weanlings, at Michaelmas, to breeding them for their own use. The classical reader cannot fail calling to his recollection here the practical lesson which Virgil, in his third Georgic, imparts on this head; neither can the purchaser of such animals do better than follow it to the very letter. Should he fix upon the one which, as he describes him:—

"Primus et ire viam, et fluvios tentare menaces
Audet, et ignoto sese committere ponti,"

he would be pretty certain of having in due time a first-rate hunter, that would turn his tail to nothing.* Nor should the breeder overlook the poet's advice to keep his young stock well, if he wishes to have them in the high form (and can any thing be finer?) in which the one of his own choice is presented to us in this most splendid passage.

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* The writer of this article recollects "a case in point," as the lawyers say, with reference to this system of purchasing *promising* colts. A farmer had, among others, a yearling colt, which he did not dream of making a hunter of, by reason of his being out of a cart-mare, until, on the hounds running over his farm, he perceived him follow them, which he continued to do till the fox was killed at the end of a long chase. His owner was, in consequence, induced to ride him with hounds when he became a horse, and a capital hunter he made, in the late Sir Richard Pulerton's hunt, the property of a yeoman of the name of Humphrey Hughes, of Altrey, one of the best riders in the said hunt. The writer himself offered seventy pounds for this horse, when he was half worn out, but his offer was refused.

ROOT CROPS.—RUTA BAGA, OR SWEDISH TURNIP.

We have never been able to persuade ourselves that root crops might not be profitably made an object of *much more attention* than they are in the Middle States; and especially the Swedish turnip. We are aware that manufacturing communities generally are needed to bring from rich lands *tons* of root crops, instead of *hundreds* of pounds of grain crops from poor ones. Still we are fully persuaded that turnips might and ought to be cultivated extensively, to be fed to dairy cows, and to be transported to market in the form of sheep and cattle—while they would greatly increase the quantity of manure to keep up the fertility of the soil. It is for that object, and as the best preparation for wheat and barley, that they are so much cultivated in England. It is no exaggeration to say that the suppression of the turnip crop in England now, would impoverish the nation, and jeopard the government.

The Swedish turnip came into use in the United States about the time of the establishment of the first agricultural journal,—"The American Farmer,"—of which to-morrow will be the twenty-ninth anniversary, making thirty years! It was introduced into field-culture on Long-Island, New York, by the celebrated William Corbett, who *described the plant*, and wrote a complete and detailed treatise on the cultivation, curing, and harvesting the root. He sent to the Senior Editor of this journal, then Editor of "The American Farmer," an account of a crop of thirty tons, or 1600 bushels to the acre, made in England. We could give many cases of crops of 1000 bushels, and more, in this country; but our purpose now is to refute the allegation that our *climate is too dry* and our labor *too dear* for this crop, by the following communication from Judge Buel, who, it will be seen, said that after six consecutive years' experience, he was more and more impressed with the profit and the value of the crop. We might find or make many re-hashes of old things for our readers, but doubt if we could better fill the same place than by giving this in Judge Buel's own language:—

From an unpublished volume of Agricultural Memoirs.—On the Cultivation of Ruta Baga as a second crop; with an estimate of its comparative value for feeding stock: By J. Buel, *of Albany.*

Having for several years grown the common white turnip with uniform success, on ground where the same season I had cut wheat, barley, rye, &c., I was induced, in 1822, to hazard the experiment, then to me a novel one, of raising the Swedish turnip after clover. My success in that and the two subsequent years has fully confirmed me, not only in the practicability, but in the economy of the practice. The result of my first experiment will be found in the Memoirs of the Board, vol. ii. p. 250.

The second experiment was upon a lay, partly of lucerne, too thin to be worth preserving, and partly of clover. The first was cut twice for green food, and the latter once for hay. The ground, having been manured, was ploughed and harrowed, and the seed drilled in, at the distance of three feet between the rows, the 28th of June. The crop was cleaned, thinned, and hoed in the usual way, and the product was between five and six hundred bushels, or about sixteen tons on the acre.

Encouraged by this success, I this year put in two and a half acres. Being short of pasture, I fed off the clover in June, instead of cutting it for hay; manured, ploughed, and harrowed the ground. A man was employed half a day in putting in the seed with a drill-harrow. The crop was between 12 and 1400 bushels. Some of the roots weighed between 15 and 16 lbs. each. The tops, nearly equal in bulk to an ordinary crop of grass, were fed to my cows in November and December, with great benefit to their milk as well as flesh. The roots were pitted in the field.

Messrs. I. and J. Townsend, who cultivate a farm adjoining me, have raised ruta baga the three last seasons, the last of which was upon a clover lay, where the grass had been mown for hay. They have used their crops in fattening bullocks, with good success.

The following is a fair estimate of the expense of cultivating my crop the current year:—

2½ days ploughing, man and team	$2.50
1 day harrowing	1.00
½ day man drilling in seed	0.25
2½ lbs. seed, at 75 cents	1.87
Man, boy, and horse, 1½ days, going through twice with the cultivator	1.50
10 days' work in thinning and weeding once	5.00
12 days do. in pulling, topping, and pitting 2½ acres	6.00
	$18.12
50 loads manure, and spreading	16.50
Total expense	$34.62

Or **$13.34** the acre. This is allowing the whole expense of the manure, though not more than a third or a half should be charged to the crop. Assuming as a fact that the product was **1400** bushels, the expense falls short of two and a half cents the bushel. I make no charge for the ground, because it had given its crop of clover; and the tops more than compensated for the after-feed. Besides, it is greatly enriched, and made clean, and in fine order for a barley crop, by the manure and turnips.

That I may not be charged with underrating the labor, I will state my mode of culture somewhat in detail. The ground, being a sand or sand loam, requires but one ploughing for any crop, and is soon pulverized by the harrow. This work was therefore done in less time than is stated in the estimate. The drill-barrow is propelled by a man in the same way that a wheelbarrow is; and it requires the same time to drill in and cover the seed, that it would to furrow the ground for corn. The seed being sown in drills, an implement called the *cultivator*, which cuts **22** inches, destroys the weeds and mellows the soil between the rows. The thinning and weeding are performed by turnip-hoes, the blades of which are about an inch and a half wide, and eight inches long; their extremities being rounded, turned up and united, form a shank for the handle. With one of these, a man walks between the rows, and draws it through the strip left untouched by the cultivator, leaving the plants standing only at intervals of nine to twelve inches. After a little practice, a laborer will thin half an acre a day. I have estimated one-fourth of an acre as a day's work. In harvesting, pits are made at convenient distances, five or six feet square, and eight or ten inches, only, deep. The roots are drawn up with a potato-hook, and thrown to the edges of the pit, where a boy seizes them by the tails, and, with a large knife, strikes off the top at a blow, and throws them into the pit. They are raised in a pile two or three feet above the surface, and brought to a point, slightly covered with straw and two or three inches of earth.

It remains to be shown, that the crop thus produced is really worth what it has cost: to wit, *two and a half cents the bushel*, or thirty-four dollars sixty-two cents in the gross. I can perhaps best demonstrate this, by stating the uses to which it is to be applied, and the manner of consuming it. As my farm is small, it is of importance that every acre should be appropriated to the most profitable use. I keep seven good cows, and a yoke of oxen. To render them profitable, it is necessary they should be well kept. With small enclosures, a good selection of grasses, and frequent shiftings, a cow may do tolerably well with an acre of pasture; but in a single enclosure of ordinary pasturage, two, and sometimes three acres to each cow are found necessary to render the dairy productive. Assuming what I conceive to be a fair medium, I should then require eighteen acres of pasture to keep my nine cattle till the first of August; and about six tons of hay (allowing each animal to consume 24 lbs. per diem, or a ton in three months) to keep them through the months of March and April. Now, these eighteen acres of pasture converted into mowing ground, estimating the product at two tons

per acre, (and I would not commute at less than three tons,) would give 36 tons of hay. The fair average price of this is $10 the ton. Deduct $4 the ton for curing and marketing, and it leaves a clear profit of $6 the ton, or $216 on the whole eighteen acres, which I propose to convert from pasture to meadow. Now if I can keep my stock, and keep it well, without the aid of these eighteen acres, my gain will be the difference between the profit on 36 tons of hay, or $216, and the actual expense of the food on which it subsists. This brings me to the first point suggested—*the uses to which the turnips are to be applied.*

I propose to feed them at the rate of one bushel per day to each animal, commencing the first of March. As 60 lbs. of roots will be far better for a cow or an ox, at that season, than 12 lbs. of hay, the quantity of hay fed to them may be diminished one-half after that time. This will make a saving of three tons of hay in March and April. This saving, which will be equal to $30, I will take no account of, as the feeding may be continued 20 days in May, *till lucerne is fit to cut.* The 1400 bushels ruta baga will, at this rate, feed nine head of cattle till the first of August. But as they may not keep later than the 10th or 15th July—and I think they will keep till that time—resort will be had to clover, if the lucerne fails, or to the early mown fields.

While the ground remains frozen, with a pick-axe or grubbing-hoe, an opening may be easily made into a pit. The whole of the roots are taken out of it, put in the barn, and covered with straw. They are fed without being cut, in the yards—they being kept well littered—or in the stables. When the ground has thawed, they are placed in mangers or troughs, in the stables, sheds, or yards. And in April and May, the roots are all taken from the pits, and spread on the floors of the barns. The lucerne will be a valuable auxiliary after the 15th or 20th of May. This grass will bear cutting three times, at intervals of 30 to 35 days; and as I have an acre of it in excellent order, I think it will afford me a continued supply, until my meadows and grain fields are ready to be pastured.

According to the data which I have assumed, the account will stand thus:

Profit on 18 acres in meadow - - - - - - -		$216,00
From which we are to deduct:		
Expense of 1400 bushels ruta baga - - -	$34.62	
Value of an acre of lucerne, say - - - -	20,00	— 54,62½
Difference or gain - - - - - - - - -		$161,37½

I have made no account for feeding the roots and lucerne, as I think the manure, the value of which is not generally appreciated, will afford an ample remuneration.

The preceding result, I am aware, will, by many, be deemed altogether visionary. I confess it is calculated to surprise those who have never had the opportunity of appreciating the value of this root; yet on re-examining the estimate, I do not find that I have erred in its favor. I have cultivated the ruta baga six years, and my opinion of its value has continued to increase. It is not only valuable for neat cattle, but, when boiled or steamed, for horses and swine; and there is nothing superior to it for sheep. It is also in the spring a fine vegetable for the table. It has been a sure crop with me; bears much frost without injury; does not become pithy, and may be kept as late in the summer as the potato. Yet it is generally getting out of credit, from the circumstance of few persons having been successful in their attempts to cultivate it. If sown on a light soil, well manured, cleaned and thinned when the plants are small, and the ground kept well stirred, it cannot fail to remunerate the cultivator.

AGRICULTURAL STATISTICS.

TABLES like the following occupy considerable space, and are expensive to publish, where the work, as in our case, is stereotyped. Nevertheless, they are indispensable to that comprehensive knowledge of the agricultural affairs of this country, which, according to the doctrine we have been preaching for thirty years, every planter and farmer ought to possess, who makes pretension to being reasonably well informed in the line of his own profession. True it is, that some of our readers, who may happen to be so favored by their Representatives in Congress as to receive the Report of the Commissioner of Patents, may get many tables like this, which serve to make up those Reports; but if by chance they should, they will probably receive along with them, as heretofore, an exhortation to submit themselves to the low wages and low living that may enable them to compete in the grain markets of the world, with the produce of the slave and the pauper labor of Europe—products which in England are consumed and *re-exported* to the United States in the shape of iron, and cloth, and coal.

Foreign Export of Wheat and Rye Flour, Corn Meal, Wheat, Corn, Rye, &c., and Ship Bread from the United States, during the year commencing on the 1st of July, 1847, and ending on the 30th of June, 1848.

WHENCE EXPORTED.	WHEAT.		FLOUR.		INDIAN CORN.		INDIAN MEAL.		RYE MEAL.		RYE, OATS, and other small grain and pulse.	SHIP BREAD.		
	Bushels.	Dollars.	Barrels.	Dollars.	Bushels.	Dollars.	Barrels.	Dollars.	Barrels.	Dollars.		Barrels.	Kegs.	Dollars.
Russia	. .	. .	5	35	. .	. .	. .	. .	. .	. .	. .	2	. .	5
Sweden and Norway	3,007	3,970	595	4,040	. .	. .	. .	. .	. .	. .	$9,059	2	. .	6
Swedish West Indies	. .	. .	5,799	34,127	2,202	1,669	2,789	8,609	325	1,399	1,670	192	110	743
Denmark	. .	. .	56	350	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Danish West Indies	. .	. .	51,222	306,303	5,443	3,712	49,915	153,860	1,011	4,291	8,851	3,005	1,303	11,275
Hanse Towns	. .	. .	4,531	27,924	284	202	200	666	. .	. .	20,021	. .	. .	. .
Holland	. .	. .	2,564	14,365	. .	. .	. .	. .	. .	. .	18,153	. .	. .	. .
Dutch East Indies	. .	. .	2,000	12,492	. .	. .	. .	. .	. .	. .	95	. .	. .	. .
Dutch West Indies	. .	. .	16,810	105,776	665	486	2,533	7,204	1,056	4,599	2,343	1,483	. .	4,972
Dutch Guiana	. .	. .	3,405	23,526	. .	. .	. .	. .	. .	. .	. .	171	. .	637
Belgium	30,207	39,602	1,873	10,046	. .	. .	. .	. .	520	2,310	28,106	1,000	. .	3,325
England	1,285,069	1,689,044	827,202	5,314,616	3,365,392	2,204,979	184,558	591,706	326	1,384	97,671	13,767	16,090	75,291
Scotland	41,923	50,435	37,586	218,234	126,907	87,021	10,225	32,052	. .	. .	1,279	34	35	133
Ireland	204,997	299,032	93,956	587,026	1,569,921	1,075,418	31,817	105,655	118	468	2,354	1,428	109	4,829
Gibraltar	. .	. .	6,038	36,227	5,000	3,500	150	600	. .	. .	201	1,505	30	3,561
Malta	. .	. .	35	215	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
British East Indies	380	500	1,488	8,982	. .	. .	. .	. .	. .	. .	1,935	180	. .	550
Cape of Good Hope	. .	. .	3,603	22,213	. .	. .	66	244	. .	. .	171	253	. .	695
Honduras	1,017	1,253	7,087	43,431	204	122	27	92	. .	. .	1,072	1,385	75	4,641
British Guiana	. .	. .	26,330	151,085	18,838	13,126	9,925	28,290	. .	. .	13,028	16,907	50	53,027
British West Indies	7,094	9,403	227,226	1,327,072	195,993	129,064	117,867	355,364	2,316	9,851	76,343	44,452	3,287	152,207
British American Colonies	309,789	385,826	274,206	1,607,893	216,562	119,730	140,554	421,329	35,462	148,416	30,561	45,886	460	161,647
France on the Atlantic	148,789	186,606	28,895	171,530	1,577	1,199	4	13	. .	. .	5,379	484	307	1,619

France on the Mediterranean	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	1	. .	3
French West Indies .	. .	. .	21,269	129,381	20,300	15,106	6,488	21,198	85	337	8,469	1,243	175	4,686
Miquelon & other French fisheries	. .	. .	4,079	24,001	1,500	1,387	50	138	. .	. .	389	38	. .	163
French Guiana . . .	. .	. .	684	4,433	264	118	100	225	. .	. .	840	. .	60	90
Spain on the Mediterranean	. .	. .	590	3,145	. .	. .	100	320	. .	. .	50	. .	. .	. .
Teneriffe and other Canaries	. .	. .	1	7	. .	. .	. .	. .	. .	. .	. .	4	20	27
Manilla and Philippine Islands	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	125	86	676
Cuba	832	1,174	29,872	154,185	205,466	125,634	7,253	22,905	. .	. .	17,142	2,386	1,918	9,766
Other Spanish West Indies .	. .	. .	14,846	90,967	4,676	3,523	12,111	38,568	50	264	1,546	2,587	3,441	14,073
Portugal	. .	. .	1	8	. .	. .	. .	. .	. .	. .	. .	1	. .	2
Madeira	1,500	2,100	4,183	26,183	54,397	38,845	750	2,588	50	175	. .	25	50	191
Cape de Verds . .	100	170	1,745	10,206	. .	. .	10	37	. .	. .	866	3,080	30	8,553
Italy	. .	. .	15	106	. .	. .	. .	. .	. .	. .	4	8	. .	19
Trieste, &c.	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	5	5
Turkey, Levant, &c. . .	. .	. .	80	525	. .	. .	. .	. .	. .	. .	. .	30	. .	75
Hayti	. .	. .	28,009	171,843	. .	. .	245	825	. .	. .	531	760	30	2,327
Mexico	. .	. .	12,070	66,218	9,987	4,801	102	153	30	94	22,120	5,979	. .	23,864
Central Republic . .	. .	. .	894	4,770	. .	. .	. .	. .	. .	. .	. .	228	. .	691
New Grenada	. .	. .	1,470	9,199	200	107	. .	. .	. .	. .	28	80	120	446
Venezuela	. .	. .	28,446	176,097	3,498	2,489	3,915	12,689	185	738	1,807	723	530	3,020
Brazil	. .	. .	294,816	1,952,212	. .	. .	3	18	. .	. .	1,218	2,150	6,755	14,904
Cisplatine Republic . .	. .	. .	25,229	152,201	1,281	780	. .	. .	. .	. .	367	271	194	1,315
Argentine Republic . .	. .	. .	3,913	24,204	. .	. .	. .	. .	50	240	26	275	. .	827
Chili	. .	. .	2,284	15,204	. .	. .	. .	. .	. .	. .	. .	4,389	1,155	15,234
Peru	. .	. .	1,329	9,334	. .	. .	. .	. .	. .	. .	. .	205	100	946
China	. .	. .	4,397	31,640	. .	. .	10	40	. .	. .	. .	3,655	645	12,387
West Indies generally . .	. .	. .	5,185	32,120	7,077	4,465	594	2,001	. .	. .	2,303	277	176	1,124
South America generally .	. .	. .	3,990	27,222	. .	. .	. .	. .	. .	. .	. .	45	. .	186
Asia generally . . .	. .	. .	396	3,129	. .	. .	. .	. .	. .	. .	. .	95	50	465
Africa generally . .	. .	. .	5,838	39,296	. .	. .	66	204	. .	. .	466	4,014	725	14,362
South Seas and Pacific .	. .	. .	1,250	8,765	. .	. .	2	8	. .	. .	108	2,980	. .	9,506
Total	2,034,704	2,669,175	2,119,393	13,194,109	5,817,634	3,837,483	582,429	1,807,601	41,584	174,556	376,572	167,790	38,121	619,096

Treasury Department, Register's Office, January 26, 1849.

Total value, $22,678,601.

JOHN SINGLETON, OF TALBOT COUNTY, MARYLAND.

FIRST USE OF MARL AS A MANURE IN THE UNITED STATES.

Some youthful and vague impressions of the services rendered to the cause of agriculture by the farmer whose name stands at the head of these remarks, served to inspire a feeling of grateful respect for his memory, which has been confirmed and augmented by the little we have from time to time learned of his habits and character. The following extract from a letter of his, in answer to one from the venerable Judge Tilghman, discloses, probably, the origin of the use of marl in the State of Maryland, if not in the United States. It will be seen that it refers back to a period of almost half a century. We shall take an early opportunity to give the whole letter, and to ask how much has been discovered, beyond what is there suggested, as to the use of marl in particular, and to farm management in general? Let us, then, while we press forward in the noble struggle to see who shall excel in the discovery and dissemination of truth, and who in examples of morality and industry—let us, we say, *never forget what we owe to those who have gone before us.* Is it not due, as well to the good of society as to the memory of such benefactors as even at this distance it is seen Mr. Singleton was, that our agricultural annals should preserve fuller and more enduring memorials? We do not particularly know who may be his surviving relations, but if we are not mistaken there is a nephew who possesses all the qualifications of scholarship and materials, with affectionate reverence, to do justice to the virtues of the man and the value of his example. But we took pen only to register, from the letter to which we have referred, the following extracts, which we look upon as historical of *the first use of marl in Maryland.*

This, I believe, will answer all your questions, except as to the time when I began to use the marl, and how soon I experienced the beneficial effect of it?—being your fourth question.

In August, 1805, in digging down a bank on the side of a cove, for the purpose of making a causeway, I observed a shelly appearance which it struck me might improve clay soil; I took some of it immediately to the house, and putting it into a glass with vinegar, found it effervesced very much; this determined me to try it as a manure; accordingly, in September, I carted out about eighty loads, and put it on a piece of ground, fallow, preparing for wheat, trying it in different proportions, at the rate of from twenty-seven to about a hundred loads per acre, and the ground was sown in wheat; I could not, myself, be satisfied that there was any difference through the winter and spring, although General Lloyd, who was viewing it with me in the spring, thought he could perceive some difference in favor of the marl; but at harvest time, the wheat, though not more luxuriant in growth, or better head, was considerably thicker on the ground; and, after the wheat was taken off, the ground where the marl had been put was set with white clover, no clover being on the ground, on either side of it. The next year, 1806, I discovered it in the drain into the head of the cove, which I immediately ditched, and from the ditch put out seven hundred loads, on the fallow ground: the effect as to the wheat and clover was the same, (this was put for experiment, at the rate of from forty to a hundred and twenty cart-loads per acre,) though the marl was not of the same kind as the other, but more mixed with sand and surface-soil, being taken from the low ground, by ditching, and all mixed together. I also tried it on corn ground, spread out as above-mentioned, and found the effect immediate, as to the corn, and in the same manner as above described, as to the wheat sown on the corn ground; this induced me to persevere in the use of it, which I have done ever since, adopting the mode I mentioned before, putting it at first from forty to seventy loads per acre, till I have now come down as low as eighteen or twenty loads per acre, going the third time over the ground with it.

I believe I have now answered all your inquiries, as well as I can, except

as to the average comparison of the past and present crops, which I cannot well do, for the reasons above given, and also that my fields are entirely changed, neither containing the same grounds, nor the same quantity of ground in each; but I believe I shall not be much out of the way, if I say that I think the soil now capable of producing between two and three times as much per acre as it would before I began to use the marl; and though the marl has not solely produced the improvement, yet the improvement would have been far short of what it is, if it had not been for the marl, which has contributed, in a very large degree, towards it; and no small matter in favor of the marl is, that, by the blessing of God on my endeavors, I have, in twelve years, been enabled to improve three hundred acres of ground to the pitch that these are, and am now in a fair way of increasing in the same ratio that a snow-ball increases as it is turned over.

CONDENSED PORTABLE DIET FOR THE GOLD DIGGERS.

Some fifteen years now past, the Senior Editor of this journal had the high satisfaction of sojourning some days, in "charming summer weather," at *Old Brandon*, on the James River—the venerable and delightful residence, then, of the late George E. Harrison, distinguished, even among Virginia gentlemen, for his refined manners, and for hospitality at once sumptuous, easy, and elegant.

Among various sources of recreation provided for his guests, there was laid upon the hall table the somewhat celebrated "Byrd Manuscript," as it was called. The author—Col. Byrd—had been appointed by the British government, long before the Revolution, Commissioner to run the Boundary Line between the Old Dominion and the Old North State, and this manuscript was the record of his daily proceedings under that appointment; but how little could any one expect to find in a mere diary of such a service, such a mass of shrewd observation, witty reflections, and curious anecdote, as is interwoven in this old manuscript about men, statesmen, soldiers, Indians, &c. We copied, by permission, numerous passages for the amusement of our readers at that time, of "The Turf Register and Sporting Magazine," then not only the first of its kind, but among the most popular and best sustained periodicals that our country has produced.

Among these scraps we find a prescription by Col. Byrd, for the preparation of a portable food for those who are about to embark, as those are who are setting out for California, on long and precarious journeys through unsettled countries. We republish it now, in the persuasion that it ought to find its way into the knapsack of all who design thus to wend their way 2000 miles across, through wild, uninhabited prairies, to the great Diggins in California.

We here give it for their benefit, and will think ourselves well paid if those who have recourse to it will only bring us back of gold an ounce for a pound of all the provisions they will need if they follow the annexed prescription of old Col. Byrd. Only imagine that such provision should have been then deemed necessary in running the line between Virginia and North Carolina!

[Extract from the Byrd Manuscript in the Brandon Library.]

PORTABLE PROVISIONS FOR TRAVELLERS AND SPORTSMEN.

The portable provisions I would furnish our foresters withal, are glue broth and rockahominy, one containing the essence of bread, the other of meat.

The best way of making the glue broth is after the following method:

Take a leg of beef, veal, venison, or any other young meat, because old meat will not so easily jelly; pare off all the fat, in which there is no nutriment, and of the lean make a very strong broth after the usual manner, by boiling the meat to rags, till all the goodness be out. After skimming off what fat remains, pour the broth into a large stew-pan, well tinned, and let it simmer over a gentle even fire till it come to a thick jelly. Then take it off, and set it over a boiling water, which is an evener heat, and not so apt

to burn the broth to the vessel. Over that let it be evaporated, stirring it very often, till it be reduced, when cold, into a substance like glue. Then cut it into small pieces, laying them singly in the cold, that they may dry the sooner. When the pieces are perfectly dry, put them into a canister, and they will be good, if kept dry, a whole East India voyage.

The glue is so strong that two or three drachms dissolved in boiling water, with a little salt, will make a half pint of good broth; and if you should be faint with fasting or fatigue, let a small piece of this glue melt in your mouth, and you will find yourself surprisingly refreshed.

One pound of this cookery should keep a man in good heart above a month; and it is not only nourishing, but likewise very wholesome. Particularly it is good against fluxes, which woodsmen are very liable to, by lying too much near the moist ground, and guzzling too much cold water. But as it will be only used now and then in times of scarcity, when game is wanting, two pounds of it will be enough for a journey of six months.

But this broth will be still more heartening if you thicken every mess with half a spoonful of rockahominy, which is nothing but Indian corn parched without burning, and reduced to powder. The fire drives out all the watery parts of the corn, leaving the strength of it behind, and this being very dry, becomes much lighter for carriage, and less liable to be spoiled by the moist air.

Thus half a dozen pounds of this sprightly bread will sustain a man for as many months, provided he husband it well, and always spare it when he meets with venison, which, as I said before, may be very safely eaten without any bread at all.

By what I have said, a man must not lumber himself with more than eight or ten pounds of provisions, though he continue half a year in the woods. These and his gun will support him very well during that time, without the danger of keeping one single fast. And though some of his days may be what the French call "jours maigre," yet there will happen no more of those than will be necessary for his health, and to carry off the excesses of the days of plenty, when our travellers will be apt to indulge their lawless appetites too much.

Remarkable Produce at Augusta, Georgia.—In the autumn of 1819, a squash-vine in the garden of Mr. Searle, up to July 31, had yielded 775 squashes.

Gathered 9th August	- - - - - - -	325
" 16th "	- - - - - - -	250
" 23d "	- - - - - - -	375
" 30th "	- - - - - - -	350
" 15th September	- - - - - -	140
Total	- - - - - - - -	1440

They averaged 48 pounds for every hundred squashes. In the same garden, one watermelon seed produced that year 380 pounds of melons. The melons weighed separately from 12 to 34½ pounds.

To prevent Horses rubbing the Hair off their Tails.—Grease the rectum or fundament with hog's lard or bacon; repeat it until the hair grows out again. The habit is caused, it is thought, by an itching of the fundament, occasioned perhaps by the discharge of a species of worm. At any rate, we have been well assured that this is a certain cure.

HUSBANDRY AND PRODUCTS OF CLARKE COUNTY, VIRGINIA.

To the Editors of the Plough, Loom, and Anvil.

GENTLEMEN:—In answer to the queries made in your letter, dated the last day of '48, as also those appended to my communication in the February number, I take great pleasure in replying, to the best of my abilities.

The kind of corn planted by me was large white gourd seed. As some time has intervened, I do not pretend to be very accurate in my estimate of the cost of preparing for and planting the crop; but, to the best of my recollection, it was as follows:—

To five days' ploughing with two three-horse teams,	$25 00
To harrowing one day with two three-horse teams,	5 00
To laying off with four one-horse ploughs,	5 00
To planting and thinning crop,	5 00
To husking and housing 200 *barrels*,	45 00
To shelling my half 500 bushels,	5 00
To hauling to Winchester, (10 miles, at 5 cents per bushel,)	25 00
The cost of the whole crop, shelling, and carriage of half,	$115 00
By 500 bushels of corn, sold at 83 cents per bushel,	415 00
Balance, after deducting all expenses from my half,	$300 00

Allow **$30** for shelling and carriage of the other half, supposing it to be sold at the same price, (at which it might have been,) it would add **$385** to the profits, making from **12½** acres, **$685.**

Land is worth from **$35** to **$60.** Mrs. P. has recently refused **$50** per acre for the farm on which this crop was grown.

With regard to the value of our slaves being lessened by our proximity to Pennsylvania—in a pecuniary point I think not.

Ours is not properly a grazing country; but it is becoming somewhat the practice to combine it with tillage to a small extent, which is found profitable.

The bullocks are bought in the fall at an average of about **$15,** and sold the ensuing fall at an advance of **$10** or **$12** per head, without being corn-fed.

We are careful of, and make due use of our manure; but farming on so large a scale as we do, of course our main dependence is on clover and plaster.

I shall not attempt to draw a comparison between this county and Albemarle, but merely make an extract from an essay delivered before the Agricultural Society of that county, by T. J. Randolph, and published in the Farmer's Register, Jan. **31, 1843:** "The country through which the road passes for eight miles, from Ashby's Gap to Warrenton in the county of Fauquier, is clothed most beautifully with grass, and in April, **1842,** I was told of the sale of a farm at **$50** cash per acre, and that this had not been deemed an extraordinary price for those lands. The proprietors consider them as better *grass* lands than those of *Clarke* and Jefferson, indisputably the *finest* lands in the state. Yet these lands in Fauquier are, in their relative position to the Blue Ridge, aspect of hills, valley, and stream, as well as in apparent quality of original soil, more nearly like the Brown's Cove of our county than any two spots of country I have ever seen. And how different has the hand of man made them! One covered with luxuriant crops, fields of beautiful pasturage, innumerable herds of fat cattle, in fine every thing denoting wealth and abundance. The *other,* like large portions

of our country, exhibiting the remorseless worryings of a short-sighted cupidity, where man has warred against nature and suffered in the conflict."

Wishing these answers may be satisfactory, I am your subscriber and obedient servant. NATHANIEL BURWELL, Jun.

Mill Wood, Clarke County, Va., Feb. 9, 1849.

P. S. There are several misprints in the last communication, (No. 8, page 508,) bushels being put for barrels in divers places, which gives it rather an odd reading.

N. B.

Thus the cost seems to have been about $9 an acre, or 11 cents per bushel, in the corn-house on the land, without charging interest; $3 per acre on the land.

The reader may be gratified to see a comparison of the estimates of the cost of corn in different States, according to the report of the Commissioner of Patents. These estimates may in some measure aid the corn-planter in the endeavor, which all of them should make, to find out whether they are or are not coming out at the "little end of the horn."

Mr. Harvey Hunton, of New Hampshire, says he gets 40 bushels to the acre at a cost of 50 cents a bushel, including $8 *per acre for manure.* Land valued at $25.

Mr. Ambler, of Litchfield, Conn., makes 50 bushels per acre, at a cost of $36\frac{5}{10}$ cents per bushel. Land valued at $50.

Mr. Doubleday, of Binghampton, New York, values his corn land at $25; averages 40 bushels; cost of production 29 cents; nothing charged for manure except 37 cents per acre for plaster in the hill.

Mr. Shearer, of Plymouth, Michigan, makes 50 bushels per acre, at a cost of $8.35; value 30 cents per bushel.

S. M. Bartlett, of Michigan, makes 50 bushels per acre, at a cost of $11\frac{3}{5}$ cents per bushel, without manure.

R. W. Griswold, of Ohio, without manure, makes 50 bushels average, at a cost of 20 cents per bushel.

In Fayette Township, in Western Pennsylvania, the yield per acre for *wheat* is 15 bushels; cost $6, or 40 cents per bushel. Corn, 40 bushels to the acre; average expense, $16\frac{1}{4}$ cents per bushel; interest rated at $33\frac{1}{3}$ cents per acre for value of land.

Drill Husbandry.—At one of the celebrated sheep-shearings that used to be given by Mr. Coke, of Norfolk, afterwards Earl of Leicester, at which hundreds congregated and remained for days together, he mentioned a fact that is not generally alluded to, as being founded on the observation and practice of his manager, Mr. Blaikie, a man of great sagacity. It was that a field with a southern aspect, if rich, should be drilled north and south; but if DRY, and in want of shade, it should be drilled east and west. It is easy to see that, in the latter case, the crop would shade the land from the influence of the sun, and counteract the effect of drought.—*Model American Courier.*

Strawberries.—At the request of the public I forward the proportions of the substances employed by me in the cultivation of the strawberry:—The loam for potting and top-dressing, containing one-third decayed vegetable matter, (humus,) is mixed with eight per cent. of the superphosphate of lime, in bulk. For watering, to the ammonia is added one-half its weight of sulphuric acid, and the whole is diluted in 2000 parts rain-water, irrigating twice a week during summer and autumn, and whenever the soil requires moisture in spring, preserving a humid atmosphere. The kind of strawberry is Keen's Seedling.—*J. Elliott, Norton Conyers, Ripon.*

MICE.

EXTRAORDINARY instances of the rapid increase of mice, and of the injury they sometimes do, occurred a few years ago in the new plantations made by order of the Crown in Dean Forest, Gloucestershire, and in the New Forest, Hampshire. Soon after the formation of these plantations, a sudden increase of mice took place in them, which threatened destruction to the whole of the young plants. Vast numbers of the young trees were killed,—the mice having eaten through the roots of five-years-old oaks and chestnuts, generally just below the surface of the ground. Hollies also, which were five and six feet high, were barked round the bottom; and in some instances the mice had got up the tree, and were seen feeding on the bark of the upper branches. In the reports made to government on the subject, it appeared that the roots had been eaten through wherever they obstructed the runs of the mice: but that the bark of the trees constituted their food was ascertained by confining a number of the mice in cages, and supplying them with the fresh roots and bark of trees; when it was found that they fed greedily on the latter, and left the roots untouched. Various plans were devised for their destruction: traps were set, poison laid, and cats turned out, but nothing appeared to lessen their number. It was at last suggested, that if holes were dug, into which the mice might be enticed, their destruction might be effected. Holes therefore were made, about twenty yards asunder, in some of the Dean Forest plantations, being about twelve in each acre of ground. These holes were from eighteen to twenty inches in depth, and two feet one way, by one and a half the other; and they were much wider at the bottom than the top, being excavated or hollowed under, so that the animal, when once in, could not easily get out again. In these holes, at least 30,000 mice were caught in the course of three or four months, that number having been counted out, and paid for by the proper officers of the forest. It was, however, calculated, that a much greater number were taken out of the holes by stoats, weasels, kites, hawks, and owls, and also by crows, magpies, jays, &c., after they had been caught. The cats also which had been turned out resorted to these holes to feed upon the mice; and in one instance a dog was seen greedily eating them. In another, an owl had so gorged himself, that he was secured by one of the keepers. As the mice increased in number, so did the birds of prey, of which at last there were an incredible number. In addition to the quantity above mentioned, a great many mice were destroyed in traps, by poison, and by animals and birds: and it was found that in the winter, when their food fell short, they ate each other, so that in Dean Forest alone, the number which were destroyed in various ways could not be calculated at less than one hundred thousand, and in the New Forest the mortality was equally great. These calculations are made from the official weekly returns of the deputy-surveyors of the forests, and other sources.

There were two descriptions of these mice. One of them called by Buffon *Mulot*, was our long-tailed field-mouse, *Mus sylvaticus*. The other was a short-tailed mouse, *Cervicola agrestis*, and seems to have been the same animal as the *Campagnol* of Buffon. There were about fifty of these latter taken to one of the former. The long-tailed mice had all white breasts, and the tail was about the same length as the body. These were chiefly caught on the wet greens in the forest, and the short-tailed both on wet as well as dry ground.

The short-tailed mouse has a much thicker head than the long-tailed one, and its ears are very short, and almost hid in the hair. Its body is about three inches long, and the tail one inch. The upper part of the body is of a reddish brown, and the belly a deep ash colour. Their runs and nests are under the surface of the ground. They produce seven and eight, and in some instances nine young at a time.

Amongst the birds of prey which made their appearance in Dean Forest during the time the mice were in the greatest numbers, was a small white owl. None of these birds had previously been observed in the forest; but in the space of a few months, many were seen, and were considered to be the most destructive of any of the winged enemies of the mice.

In the pits made for catching the mice, they exhausted themselves in efforts to climb up the sides, so that by far the greater number of them were taken out dead. Many were drowned where the water partly filled the holes; but so little did they dread water, that ash was seen fresh barked, the bottom of which was surrounded with water in such a way, that one of the officers of the forest asserted, that the mouse must have been actually swimming at the time of barking it. In the same report he also mentions his belief that the weasels, at the time they are preying on mice, swallow them whole, and that what they cannot digest, as the fur, &c., they void from their mouths in balls afterwards. In one of the retreats of a weasel ten mice were found; and another weasel

was seen to run into its hole with a mouse in its mouth. It is probable, however, that they were brought there as food for the young. The weasel, I believe, generally sucks the blood of its prey, at least that of the larger animals.

It should be mentioned in conclusion that, in a plantation in Dean Forest, consisting of three hundred acres, not more than four or five plants were found which were not destroyed or injured by the mice.

INCUBATION OF BIRDS.

It is an interesting fact in natural history, that if you remove one or more eggs from the nests of some birds, before they have completed their natural complement, they will continue laying a great number afterwards. If the peewit (*Tringa Vanellus*) is deprived of only one egg after she has completed her number, she immediately forsakes the rest: if, however, she has but one other to lay, and all but one of her eggs are removed, she will continue to lay for ten or twelve days, and sometimes longer. The same has been observed of the blackbird, lark, and the long-tailed titmouse: the latter has gone on to lay as many as thirty eggs before she began to sit, a friend of mine having removed that number. In the case especially of the lark, if only one or two eggs are allowed to remain in the nest, the bird will go on to lay for a long time; but if there are three, she will sit. The usual number of eggs in a lark's nest is five.

This is one of those mysteries in nature which it is not easy to account for. We find that a bird, as soon as it has deposited four eggs in its nest, as in the case of the lapwing, immediately ceases to produce any more; but if disturbed in its arrangements, will go on to lay perhaps five times that number, and yet cease the moment it has collected its usual number for hatching in the same spot. This property does not seem to belong to our domestic fowls. A hen, when she wants to sit, will as readily do so upon one egg as more, and so will a turkey. This latter bird is of a very torpid nature, and will continue to sit for many months together, on a very scanty supply of food.

It appears difficult to assign a reason why birds of the same size and species should produce eggs of a different shape and color. The hedge-sparrow's egg is blue; while that of the robin, who lives on the same sort of food, and is like it in various particulars, produces an egg of a darkish brown and white color, ornamented with yellowish brown spots. The cormorant has pale green eggs, while the egg of the gannet is white: both these birds feed on fish. The eggs of the rook, magpie, and lapwing, are nearly similar in size and appearance. Those of the pigeon, owl, and kingfisher, are white; and those of the blackbird, of a bluish green. In like manner, the eggs of the land tortoise are of a dusky, brownish white; and those of the crocodile, of a bluish white. Even hens in the same poultry-yard, and fed on the same food, produce eggs of a different color, some being much darker than others. I have also observed that some ducks of the same breed have white eggs, and others bluish ones. Hens sometimes produce eggs with a double yolk in them, and others have been found with a double shell. It is a curious and interesting fact, mentioned by Blumenbach, that the part of the yolk of an egg in which the future chick is placed, is so much lighter than the opposite side, that in whatever position the egg is placed, this part is always uppermost, and opposed to the belly of the incubating bird.

Another wonderful fact respecting eggs is, that some birds have the property of either retaining their egg after it has arrived at maturity, or of suppressing altogether the further progress of those eggs which had arrived at a certain size in the ovarium. I have on several occasions purchased pullets for my farm-yard which had just begun to lay. Perhaps on their way to their new home they would drop one egg in the basket in which they were confined; but I have invariably found that, on arriving at a strange place, they have altogether ceased to lay any more eggs till they had become habituated to their companions, and had made themselves acquainted with the localities of their new situation. We know, on opening a pullet who has just begun to lay, that there is a regular succession of eggs of different sizes in the ovarium. Some are nearly complete, others are as large as a marble, and others of the size of a pea. The circumstance of birds being endowed with the extraordinary property of preventing the eggs from arriving at maturity, when their usual habits or place of abode have been changed, is one of those facts in natural history on which little light has yet been thrown. If the leg of a pullet is broken after she has laid two or three eggs, and she is thus prevented from seeking enough of that substance which is necessary to be taken into the stomach with her food, for the purpose of encrusting the egg, she will perhaps drop one without a shell, and then cease altogether from laying any more

till the bones of her leg are knit, and she is able to go about as usual. She then begins to lay again, but the number is regulated by those she had previously laid. Suppose, for instance, that she had laid four eggs before her leg was broken, and that the quantity in her ovarium when she first began was sixteen, she would, when she resumed her laying, only produce the remaining twelve. From this it is clear that a certain quantity of some material—lime and chalk probably—is necessary to enable a hen to produce a perfect egg, and that the want of it retards the process going on in the ovarium, without producing any immediate injury to those eggs which were in a gradual process towards maturity. In the instance already mentioned, of hens ceasing to lay on being brought to a strange place, it was probably occasioned by their restlessness, and not knowing at first where to go in search of what was necessary to enable them to bring their eggs to perfection. It is much to be wished that this curious subject should engage the attention of naturalists more than it appears to have done.

MANUAL OF MANNERS.

CONDUCT AT TABLE.

St. Peter enjoins the practice of "hospitality one to another without grudging." When people invite company, they ought not to be niggardly, as if they were afraid of the expense; nor yet should they be unsuitably extravagant, as if they wished to make a display. Above all, they should not show themselves over-anxious on the occasion; if they desire their guests to be satisfied, they should let them perceive that they are satisfied themselves.

To young married people this advice may be given:—When you have a house of your own, and see company, do not be giving your orders in an imperious tone, as if you were resolved to show your friends that you are master in your own house, which no one doubts. Neither get angry, or betray displeasure at any thing, before company. Nothing spoils the comfort of the party so much as misbehavior of this kind. An easy and unconstrained manner will free the guests from all restraint. Overlook any little fault that may be committed by the servants; but if it should be necessary to notice it at such a time, do it gently and with forbearance. This will put the company at their ease, instead of rendering them uncomfortable; which a contrary demeanor never fails to do.

Too great a display of plate, or too dazzling a show of crystal, unless upon some particular occasion, is in bad taste. Simplicity is the soul of good-breeding, as it is the essence of natural beauty; and to put your visitor on a footing with yourself is the best compliment you can pay him. When you see company therefore, let the table be set out tastefully, but not ostentatiously;—in a manner suitable to your station, but not, as it were, to exhibit your pride and wealth, more than your hospitality and social feeling. Remember that your guests are, for the time your adornments, and not your vessels of silver and gold; and let the honor be given to the former, for whom the feast is spread, without any vaunting show of the latter. Do not invite your friends that you may display your riches; but rather render your riches subservient to the honorable reception and well-treatment of your friends.

Scarcely any thing can be more objectionable than the system of pressing, which some unthinking persons are guilty of at table. It is no sign of hospitality, though doubtless meant for such, or of good-breeding, to force people to eat or drink more than they have a mind to do, or than they feel will do them good.

To be the first to praise your own viands, is a certain mark of vanity, if not of vulgarity. If you wish to show your good-breeding, content yourself with a simple approval, should occasion require you to do so. If you are complimented on the excellence of your dishes, or the choiceness of your wines, receive such praise with a modest acknowledgment, and with no affected airs.

At table the conversation ought to be general, not only before the servants, but after they have retired. There are certain unbefitting topics, there more particularly than anywhere else, not to be spoken of to "ears polite,"—such as those subjects which are apt to affect the stomach, or raise repulsive ideas in the mind.

To rise from table before the cloth is removed, on any account whatever, except when overtaken by sudden illness, evinces a want of good-breeding, or an intentional neglect of the company, which is highly reprehensible. In the host it is unpardonable, and in the guest unmannerly in the extreme. For the master of the house to be the first to quit the table, is an insult to his guests. To rise from your chair at all, even to assist yourself in carving, is a mark of low breeding. To reach across the table is equally contrary to good manners.

The hour of dinner varies in different

families, and with different ranks. Among friends the precise time is generally known; therefore a call at that hour is understood as an intrusion, and, unless when people are on the most intimate footing, or are really in quest of their dinner, is unusual in genteel society.

The conduct in the drawing-room, both before and after dinner, belongs rather to etiquette; but there is one practice to which, in general, literary and studious men are addicted, upon which a remark may not be thrown away:—that is, seizing upon a book and reading, when the person so offending ought to be engaged in conversation with the lady or gentleman seated beside him. It is a sure mark of the want of knowledge of the world to be guilty of such a practice: it exhibits also an undeniable preference of the book to the company, for which the person who shows himself so devoid of good-breeding is either unsuited, or he is desirous of arrogating to himself a privilege allowed to none—namely, the privilege of being rude. On this ill-bred custom of reading in company something farther will be said in the chapter on Amusements.

It is not necessary that any thing should be said here regarding the mere etiquette to be observed at table—that being more readily acquired from observation in society than from the precepts of a book like this; but, while upon this head, it may be remarked that there is one thing which those who give parties should keep in view, and that is as to the *number* of guests invited to an entertainment,—a point which ought to be as much attended to as their quality, or breeding. A crowded table should always be avoided. According to Marcus Varro, who wrote a treatise on the subject, the number present should not be less than that of the Graces, nor more than that of the Muses. This principle of hospitality was well understood by George the Fourth, who usually limited the number of those invited to his table to eight persons. Such a number enables the host to see and converse with every one present, and to attend to the individual comfort alike of all his guests. A larger company would distract his attention, and is, besides, subject to confusion and noise.

This book is intended for English readers, and the author of it would wish to be understood as desirous of improving English manners. The flippancy and frivolity of the French he considers beneath his standard; and their gayety and graceful ease of manner, even when these really spring from the heart, are so different from English politeness and suavity, that he need not enter upon a comparison between them, the contrast being sufficiently strong of itself; and it does not come within the scope of this work to introduce any dissertation on foreign manners or peculiarities. The writer only interrupts, as it were, the course of his regular subject, to say, that something like the following scene, as related by Madame de Genlis, must have been witnessed at an English party, although its features perhaps were not so strongly marked, nor—had he himself described such a scene—would he have depicted it in such strong terms. In England, as in France, political discussion has been the bane of society. It is introduced everywhere, even where least expected. Surely when people meet to pass the evening in enjoyment and social ease, all topics of either an exciting or displeasing nature ought to be carefully eschewed, and general harmony and good-fellowship prevail. What a slight upon the gentler sex it is for the gentlemen to enter upon the discussion of questions in which the ladies take no interest, to the exclusion of all other subjects, or sources of general entertainment and information!

"Towards the end of June, 1821," says the Countess de Genlis, in her lively memoirs, "I dined with thirteen persons, amongst whom were four peers, four marshals of France, and three generals: amongst the peers there were two dukes. I was seated betwixt two peers at dinner; I had no trouble in taking my share in the conversation, for they spoke of nothing but politics, and addressed their conversation to their friends at the other end of the table. We returned to the drawing-room after dinner, and at the moment I was sitting down, I saw with surprise that all the dukes and peers had escaped from me; each of them took hold of an arm-chair, dragged it after him, approached his neighbor, and thus formed a circle in the centre of the room. I was thus left quite alone, with a semicircle of backs turned towards me; to be sure, I saw the faces of the other half of the party. I thought at first they had seated themselves so, to play at those little games that require such an arrangement, and found it very natural and proper; but it was no such thing—it was solely for the purpose of discussing the most difficult questions of state policy. Every one became a noisy orator, bawled out his opinions, interrupted his neighbor, quarrelled and talked till he got hoarse. They must all have been in a precious state of perspiration. It was a correct picture of the Chamber of Deputies; in fact, it was a great deal worse, for there was no president!"

As the way a person conducts himself at table, when invited out to a dinner party, is often taken as a criterion of one's general

breeding, you should endeavour to attain to an ease and gracefulness of manner on such an occasion, which you will find to be much in your favor. Every thing like flippancy or self-sufficiency, pertness or assumption, is to be avoided. These are positive proofs of ill-breeding, and are even more disagreeable and annoying than awkwardness or stiffness, on the part of either guest or host.

THE WHOLE DUTY OF WOMAN.

MARRIAGE.

Hast thou taken to thyself an husband after the institution of heaven, hast thou consented to be bone of his bone, and flesh of his flesh?

Love him as the partner of thy happiness, as the sharer of the pleasures and pains of mortality.

Without love the husband is a tyrant, and the woman is a slave.

The matrimonial vow, without affection, is a commercial contract, it is the shadow of marriage, and not the substance thereof.

Doth he respect thee; do thou nourish and improve his affections.

Art thou perverse and froward, so shalt thou extinguish the flame of love, and raze the traces of kindness from his bosom.

Art thou enamored with his accomplishments, yet let not thy affections outrun his desires, lest thy fondness too openly disgust him.

Neglect not the little arts of endearment, but let the charm which captivated the lover, secure the attachment of the husband.

Forget not the elegance of thy virginity, but appear every morning as at the morning of the bridal day.

Let not jealousy come near thy bosom: it is the monster that feedeth upon its own entrails.

It is called the child of love: but as the viper whose birth is the death of its parents, so is the conception of jealousy the destruction of the mother that bears it.

Be thou cautious to destroy suspicion in the breast of thine husband, lest it prove as fatal to thy peace as if the fruit of thine own conception.

Suspicion goeth about whispering lies, she will fill thy brain with waking dreams, thy sleep shall forsake thee, and thou wilt have no rest night nor day.

Her companions are wrath and anger, and malice and revenge, for jealousy is the rage of a man, and the madness of a woman.

Hath thy husband deceived thee, doth he proclaim it aloud, doth he publish it in the streets, and boast his shame as an act of glory; pour not vinegar on nitre, neither apply corrosives where the balsam of tenderness is wanting.

Neither the thunder, nor the storm of hail, closeth the openings of the dry earth, but the soft dew and the gentle showers of heaven.

Return his injustice with mildness of reproof, that his guilt may not have to reproach thee with bitterness; so shall thy meekness sting him deeper than the sharpest venom of the clamorous tongue.

The roaring of the stuck swine exciteth not our pity; but the patience of the bleeding lamb awakeneth to compassion.

Art thou suspected, yet hast thou been solicitous to approve thyself virtuous; patience will heal the wounds of his unkindness.

Tempt not the weakness of his suspicion by unwonted levity; thou shalt but inflame him the more, for his mind is distempered.

Wouldst thou urge a madman when he stareth, wouldst thou give him a sword that he may wound himself?

Make not thine husband a stranger to thy friends, lest the fashion of the times make you strangers to each other.

Be thou obedient, for the law of superiority is given to man from above, and subjection is the portion of the daughters of Eve.

The imperious woman raiseth a storm for her own shipwreck, and she that affects dominion should be made the slave of her husband.

As rebellion lifteth up its head against its sovereign, and thereby adds weight to the yoke it attempted to shake off, so the subjection of a wife when she usurpeth to govern, should be converted into servitude.

Expose not the infirmities of thine husband, neither contemplate on his imperfections; cast thou a lustre on his virtues, for the beauty of his conduct is an honor to thine own head.

Be not luxurious nor extravagant, lest thou convert the riches of thy husband into toys that avail not, and trinkets that are of no profit.

Affect not beyond thy sphere, nor think the honor of thy family is in the appearance of great things.

Preserve thy vow inviolate, for the strayings of thy husband absolve thee not.

EDUCATION.

Art thou a mother, let thy child be the darling of thy affections, let the fruit of thy womb be the first partaker of thy tenderness.

Are thy pleasures dearer than thine offspring, dost thou become cruel like the ostrich of the wilderness, art thou hardened against thy young ones as though they were not thine; they shall live to look coldly on thee, they shall not regard thee as a mother in the days of thy widowhood.

Dost thou refuse them nourishment from the fountain of their life, the sea monsters draw out the breast and give suck to their young, but the milk of human kindness is denied to her children.

Dote not on the idol of thy womb, for the extreme fondness of a mother is as dangerous as the violence of her hate.

Thy darling shall be taken from thee in the excess of thy love; or if it live, it shall grieve thine eye and consume thine heart, it shall bring a curse upon thee, and not a blessing.

In the morning of infancy, when the dawn of reason appears, learn thy child obedience.

On this foundation thou mayest build high towers; this clay thou mayest mould into what form thou pleasest.

An obedient mind is ductile and tender, but a stubborn breast taketh no impression.

As the young osier groweth as it is bent, as the shoot of the vine curleth as we list; so is a young child in the hands of its mother.

Correct betimes; lest thy indulgence be cruel, and evil become habitual.

Trust not a servant with the education of thy son, nor a maid servant with the tuition of thy daughter.

Study the temper and capacity of thine offspring, and model thy reproof and severity in proportion thereto.

Let not the austerity of a parent deny complacency to its own child; lest it descend to familiarity with servitude, and listen to mischiefs of flattery and insinuation.

Make thy daughter thy companion, so shall she become thy friend, the yoke of duty will be light, and the obligations of the child become the voluntary offices of goodwill towards thee.

Is thy daughter beautiful, lead her not into the public haunts for admiration; for the way of a virgin, just rising to the estate of woman, is a path where the nicest foot will slip, if the hand beareth not on the staff of education.

Let not the bowels of the mother petrify against her child, let her not cast off her daughter to misery.

Sell her not; neither make a sacrifice of her youth to the power of gold.

As those who offer immolations to Moloch, so are the idolaters of Mammon.

Let not thy conduct be a reproach to thy precepts; lest thy daughter disregard thee, and say, thou teachest others, but teachest not thyself.

AUTHORITY.

Art thou supreme in thine own house, or art thou second, in delegated authority; trust not the concerns of thy family to a servant.

Tempt not thy domestics, by putting confidence in them; give them not room to be merely eye servants.

Dost thou raise one above the rest; let him be such whose merit is conspicuous; so shalt thou excite commendable emulation in his fellows.

Let not the number of thy servants exceed the business of the day; for the hand that wanteth employment is ready to lay hold on mischief.

An unprofitable servant is a scandal to his master, he bewrayeth the hand that provideth him bread.

The vice of thy servant will be a reproach to thine house, for he goeth by the name of his mistress.

If he serve thee faithfully, cast not off thy servant in distress; neither let him ask thee for his wages.

The detention of the price of the hireling is injustice, and exciteth him to be his own pay-master.

Let not the deserving feel the weight of his servitude; neither bid the best of thine household sit down at thy table.

The reward of a good servant should be much favor, but familiarity will bring thy kindness into contempt.

The Milky Way.—The Milky Way, were it supposed to contain the same number of stars throughout its whole extent as have been observed in certain portions of it, would comprise no less than 20,191,000 stars; and as each of these stars is doubtless a sun, if we suppose only fifty planets or worlds connected with each, we shall have no less than 1,009,550,000, or more than *a thousand millions* of worlds contained within the space occupied by this lucid zone. Here an idea is presented which completely overpowers the human faculties, and at which the boldest imagination must shrink back at any attempts to form an approximate conception. The brightest and most expansive human intellect must utterly fail in grasping all that is comprehended in this mighty idea.—*Dick.*